

DEPARTMENT

PUBLIC LIBRARY
MAY 10 1947
DETROIT

Flow

THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION

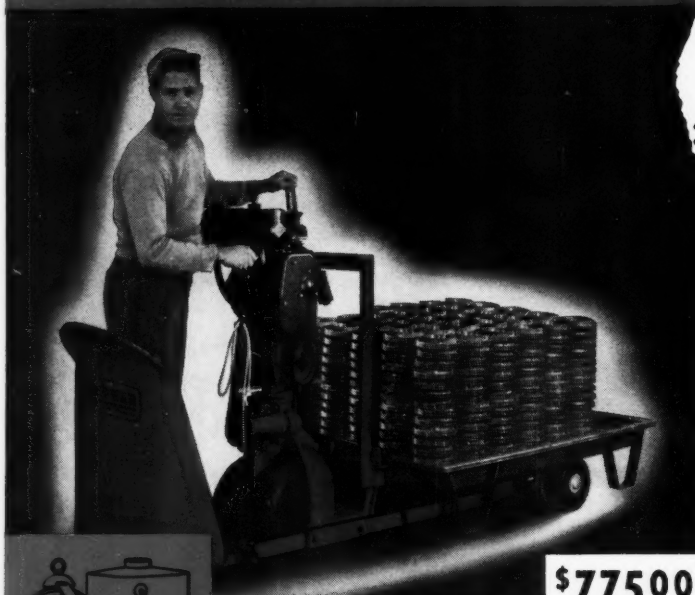


SEE FLOW CONTEST ANNOUNCEMENT—Page 3

THIS MONTH get the real 'Low Down' on Low Cost Hauling

**PROFIT
BY OUR**

NATIONWIDE truck-man DEMONSTRATION



\$77500

F. O. B. Jackson



Users get 8 hours of continuous operation per gallon of gas.



Truck-Man turns in its own length!



9 out of 10 of all shop loads are LESS than 1 TON.

ARE YOU CONVINCED?

... that your plant "can't afford" motorized material handling?

... that most shop loads are a ton or more — require a heavy truck?

... that the gasoline powered hydraulic lift truck on which the operator rides is a luxury?

WOULD YOU GAMBLE ON A "SURE THING"?

This month, sure, gamble a few minutes of your time with the Truck-Man representative nearest you. He'll demonstrate the all 'round versatility of gasoline power and hydraulic lift the Truck-Man way. He'll prove to you that it's low priced, low in maintenance, low in labor and fuel costs per ton of material moved.

IT'S A "SURE THING"!

He'll win and so will you when you see what Truck-Man flexibility can do to lick your handling problems. For your convenience, we're listing the names of dealers in your state. Give the handiest one a call that'll pay off plenty!



Alabama
Concrete Block Equip. Co.—
Birmingham
Arizona
McConkey-Dacker—Phoenix
Arkansas
A. S. Kelly—West Helena
California
Lombard Smith—Los Angeles
Bak-Rite—Oakland
Canada
D. M. Duncan Machy. Co.—
Ontario, East Windsor
Colorado
Plant Equip. Co.—Denver
Connecticut
J. B. Eng. Co.—New Haven
Florida
Construction Equip. & Sup.
Co.—Gainesville
Holley-Edward Sales—
Jacksonville
C. J. Bransell—Tampa
Georgia
Industrial Serv. Co.—Atlanta
Hawaii
Foster Equip. Co.—Honolulu
Illinois
Seago Equip. Co.—Berwyn
Illinois Equip. Service Co.—
Chicago
Factory Supplies Co.—
Rockford
Indiana
Anderson Machy. & Sup. Co.—
Anderson
Brown & Hubert—Evansville
Korte Bros.—Fort Wayne
Ellis-Scott—Indianapolis
W. & M. Supply Co.—Muncie
F. E. Sippel Equip. Co.—
South Bend
Coldwell & Co.—Terre Haute
Iowa
Harry Alter & Sons—
Davenport
Iowa Machy. & Supply—
Des Moines
Kansas
S. Riekes & Sons—Wichita
Kentucky
Bohner Equip. Co.—
Louisville
Louisiana
Milton A. Hawkins—New
Orleans
Construction Machy. Corp.—
Shreveport
Maryland
Chesapeake Supply & Equip.
Co.—Baltimore
Massachusetts
M. Siano & Sons—Greenfield
Tyler Equip. Co.—Springfield
Clapper Co.—West Newton
Michigan
Stearns-Oakes Sales Co.—
Adrian
Lusk Industrial Sales—Detroit
Miller Equip. Co.—Grand
Rapids
Lith-1-Bar Co.—Holland

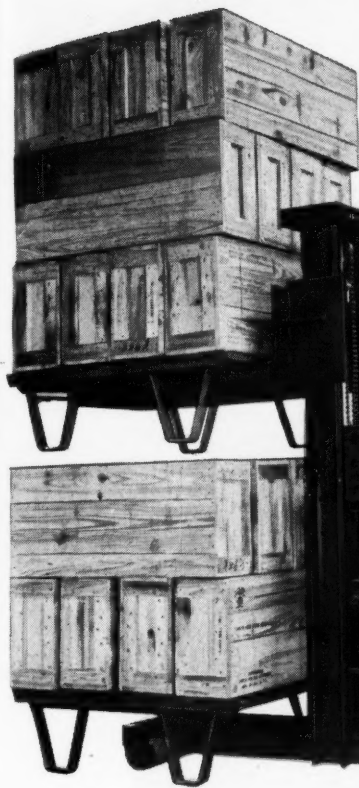
Minnesota
Materials Handling Equip.
Co.—Minneapolis
Security Warehouse Co.—
Minneapolis
Missouri
S. D. Callaway—Kansas City
Industrial Equip. Corp.—
Springfield
Guy H. Rumpf Machy.—
St. Louis
Nebraska
S. Riekes & Sons—Omaha
New Jersey
H. W. Stoddard & Son—
Nutley
New York
Grace & Way—Albany
J. I. Osgood Machy. & Tool
Co.—Buffalo
P-D Service, Inc.—Pavilion
R. L. Foringer—Syracuse
North Carolina
North Carolina Equip. Co.—
Raleigh
Ohio
Mein Industries—Cleveland
Rish Equip. Co.—Cincinnati
C. H. Gosiger Machy. Co.—
Dayton
Bearing and Transmission Co.—
Findlay—Toledo
Oklahoma
Totten-Douglass Equip. Co.—
Oklahoma City
Tulsa Equip. Co.—Tulsa
Pennsylvania
J. L. Neal Co.—Kingston
Clark Industrial Equip. Co.—
Philadelphia
Kriger & Co.—Pittsburgh
E. E. Jenkins—York
South Carolina
Industrial Equip. Co.—Sumter
Tennessee
Equip. & Supply Co.—
Chattanooga
Pcwer Equip. Co.—Knoxville
Wurzberg Bros.—Memphis
Texas
A. C. Andrews Co.—Dallas
S. Riekes & Sons—
San Antonio
Virginia
J. P. Herbert—Norfolk
Rish Equip. Co.—Richmond
—Roanoke
Washington
Materials Handling Equip.
Co.—Seattle
Star Machy. Corp.—Seattle
West Virginia
Rish Equip. Co.—Bluefield
—Charleston—Clarksburg
Banks-Miller Supply Co.—
Huntington
Wisconsin
Techman Industries—
Milwaukee

Ask Any Operator About
truck-man

1418 West Ganson,

truck-man INC.

Jackson, Mich.



Here's How **Transtacker** Stacks up Savings of **\$4800.00** in RENT alone!



When it comes to printing paper, I'm here to tell you, you're handling *heavy stuff*! But leave it to TRANSTACKER. It moves bulky, heavy paper like so much air—automatically, with the touch of your thumb.

And with its hydraulic lift, *stacks* to new heights just as easily. Manual handling limits storage space to workers' brawn. That's ended since we put TRANSTACKER to work for us. In extra storage

space utilized, it has saved us **\$4800.00 in rent alone!** At its low price of \$1800.00, that's a bargain for any man's money.

Add to this its average saving of 50% in any material handling operation—its saving in human energy, and you have the reason American industry uses this miracle of electric power so widely.

With a capacity up to 4000 pounds, it's light in weight for limited floor and elevator capacities—and its operating cost hits a new low. Send coupon. *Your savings most likely will be as much or more!*



TRANSTACKER equipped with rollers on platform and rollers on edge of bins permits easy stacking of 750 pound boxes of paper stock—and just as easy removal. A one man operation—storage space easily doubled.



Be sure to see ATCO'S new film

"PAY LOADS... PAY OFF"



AUTOMATIC TRANSPORTATION COMPANY

DIV. OF THE YALE & TOWNE MFG. CO.

141 West 87th Street, Dept. E-7, Chicago 20, Illinois

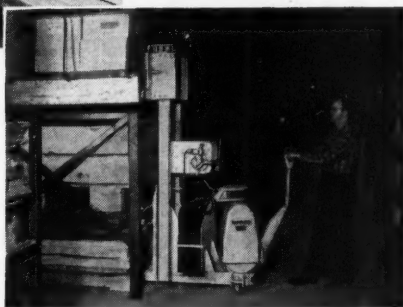
- () Send information on Automatic Transtacker.
- () Have an ATCO Specialist make a free survey of my materials handling costs.
- () Schedule me for an early showing of ATCO's new movie, "Pay Loads Pay Off."

Company Name.....

By..... Position.....

Street Address.....

City..... State.....



TRANSTACKER stacking 1300 pounds of paper stock in storage area—illustrating that the heavy materials can be lifted to new heights. Up to 4000 pound loads could be handled just as easily. One man does a three man operation.

**LOOK TO THE LEADER
FOR ALL THAT'S NEW**

MANUFACTURERS OF THE FAMOUS TRANSPORTERS, TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

MAY, 1947



Which of these Packages, in your opinion, will Roll Faster to your customer?

FROM
ACTUAL
PHOTOGRAPHS,
AT A DISTANCE
OF 3 FEET



These are three commonly used methods of marking packages—stenciling, labeling and hand-marking—common carriers, such as the railroads, truckers and Railway Express, recommend stenciling. Why take a chance—rain and damp weather obliterate type or hand written labels—avoid hand addressed mistakes—illegibility—labels coming off—lost shipments—delayed shipments. Stencil address your shipments to keep your packages out of the carriers' Lost Shipment Warehouse.

Stenciled Shipments Roll Faster

THE WORLD'S OLDEST AND LARGEST
MANUFACTURER OF STENCIL
CUTTING MACHINES



DIAGRAPH-BRADLEY
STENCIL MACHINE CORPORATION
3751 FOREST PARK BLVD. • ST. LOUIS 8, MO.

DISTRIBUTORS IN PRINCIPAL CITIES—SEE CLASSIFIED SECTION—TELEPHONE DIRECTORY—
STENCIL CUTTING MACHINES

OVER 100 D-B ITEMS FOR THE SHIPPING ROOM

Make a Note of it!



A PAPER ON THESE OR RELATED SUBJECTS MAY BE A PRIZE WINNER!

TO stimulate greater interest in the development of material handling cost control methods — a subject of vital importance to industry — FLOW is sponsoring the industry-wide "Cost Facts" Contest. Papers may be entered which describe any type of installation of material handling equipment, regardless of size, that has saved money. Since this is a contest based on facts, grammatical skill will have no bearing on the decision of the judges.

Papers submitted (they may be of any length) will be judged on (1) the analysis of the cost factors entering into the installation described, with details of the methods used in measuring cost savings. (2) the evaluation of the efficiency of present methods over past methods, and (3) the technical accuracy and completeness of the entry. Pictures, charts and layout drawings are necessary to the cost analysis presentation.

WHAT MAY BE ENTERED

Manuscripts may describe the cost factors entering into any type of material handling installation for either an entire plant or a single department.

WHO MAY MAKE ENTRIES

This competition is open to an employee or engineer of any company EXCEPT manufacturers or distributors of material handling equipment. Members of the FLOW staff cannot compete.

**RECEIVING
PROCESSING
FABRICATION**

**PACKAGING
ASSEMBLY
STOCK KEEPING**

Where the entrant requests it, we will keep published manuscripts anonymous as to author or company.

AWARDS

First Prize	\$500.00
Second Prize	\$300.00
Third Prize	\$200.00
Fourth, Fifth, Sixth, Seventh and Eighth Prizes	\$100.00 EACH

IN EVENT OF TIES, DUPLICATE AWARDS WILL BE MADE



Contest closes December 15th, 1947

SEND FOR YOUR ENTRY BLANK

Now!

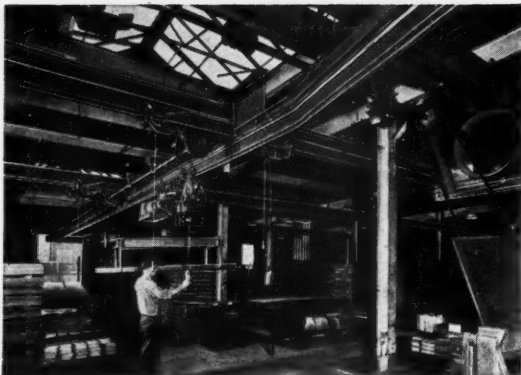
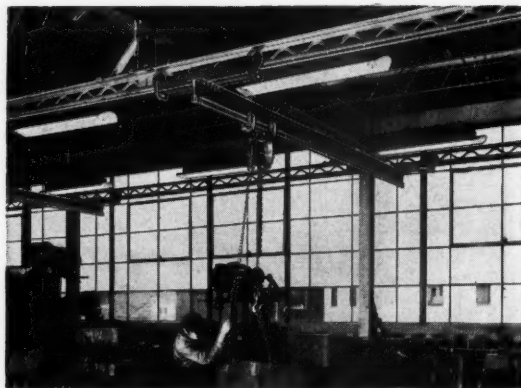
Write
CONTEST EDITOR
Flow MAGAZINE
1240 ONTARIO STREET
CLEVELAND 13, OHIO

FREE MOVING CRANES

For LOW COST HANDLING

American MonoRail Cranes supply overall coverage. Handling is not tied down to craneways since interlocking devices permit transfer in any direction. Free moving cranes serve every square foot of operating area. American MonoRail Cranes are available for any type of job. Low cost installation dovetails with low cost operation. They offer all the advantages of lightness, easy movement, strength, live-load capacity up to 5 tons.

Consultation with American MonoRail engineers will reveal why American MonoRail Equipment has been selected to serve the nation's largest industrial plants. We invite your inquiry — no obligation of course.

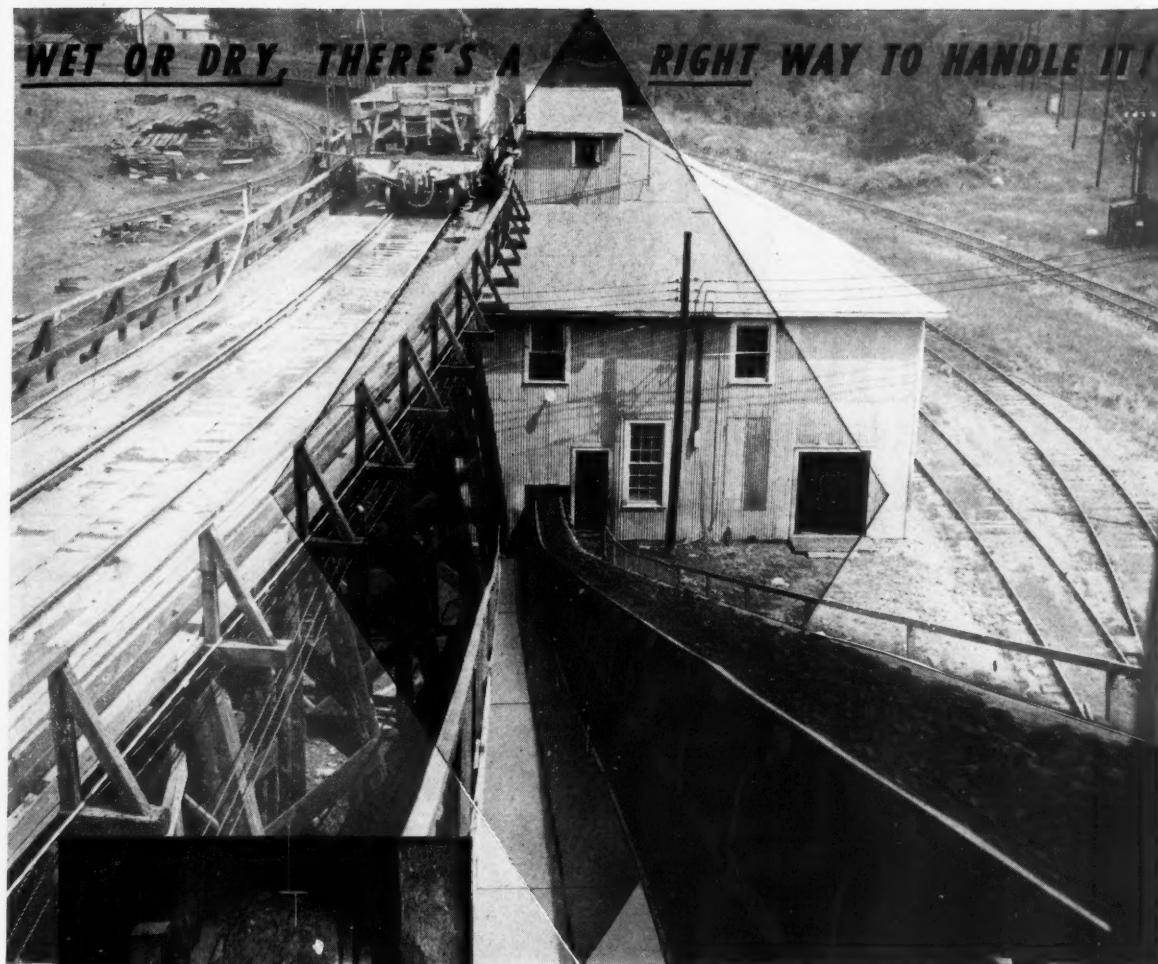


THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE

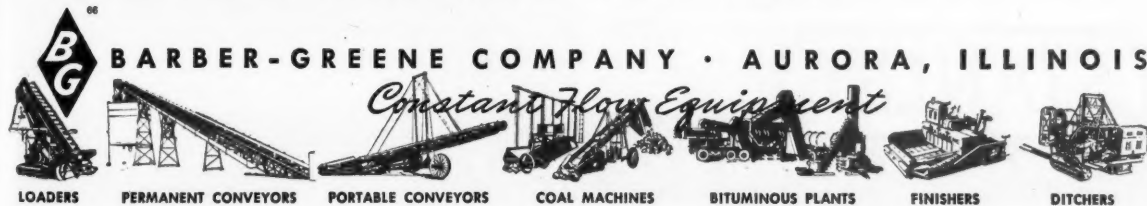
CLEVELAND 7, OHIO

Barber-Greene



There's a common answer to the problem of moving bulk materials—everything from wet Feldspar to heavy iron ore—in the fastest, most economical way. B-G Belt Conveyors have proved this time and again in numerous underground and surface installations.

And unique among all belt conveyor manufacturers, Barber-Greene offers the benefits of Barber-Greene "pre-engineering." B-G Conveyors come to you as packaged units, clearly marked for simple assembly without extra fabrication and "blueprint" work. See your Barber-Greene distributor.



MAY, 1947



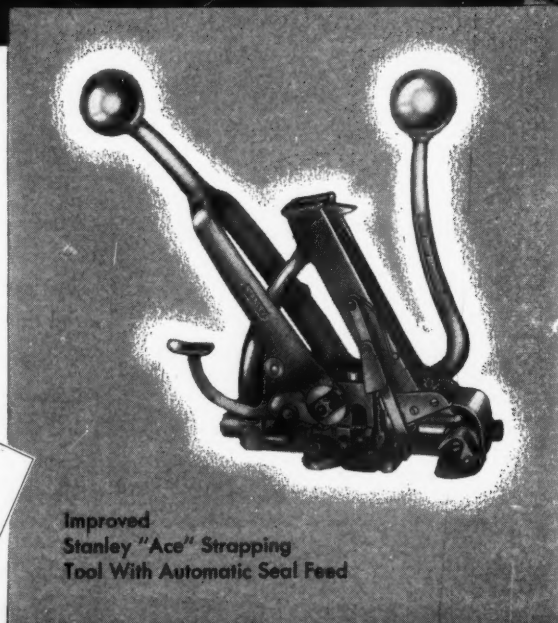
With this light, easy-to-use, improved Stanley "Ace" Strapping Tool!

● Even beginners can do a fast, expert strapping job with the improved Stanley "Ace" Strapping Tool. Positive spring feed holds a 100-seal clip in magazine in any position. One lever tensions strapping, other cuts strapping, feeds and crimps seal all in one quick motion—all in only 5 seconds.

The 10 lb. 3 oz. improved "Ace" is available in 3 sizes for $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ " strapping to handle 'most any job—with special accessories designed to meet special needs. For full details or demonstration of what the improved Stanley "Ace" Strapping Tool can do in your shipping room, write to the Stanley Works, Steel Strapping Division, 203 Lake Street, New Britain, Conn.

STANLEY

TOOLS
FOR
EVERY
STRAPPING
NEED



Improved Stanley "Ace" Strapping Tool With Automatic Seal Feed

STEEL STRAPPING AND CAR BANDING SYSTEMS



Here's everything you want to know about P&H Hevi-Lifts . . . applications, pictures, specifications. It's Bulletin H5-1 — yours for the asking.



YOU DON'T PAY FOR REHANDLING when you move loads "THRU-THE-AIR!"

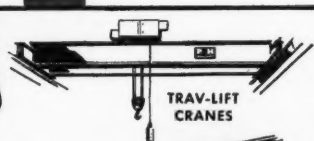
That's where you make the big saving! From the time your loads are picked up, until they're "spotted" into place, you have no rehandling at all. No "muscling" before and after . . . your P&H Hevi-Lift Hoist does *all* the work, quickly, effortlessly.

• Think of the time and energy saved!

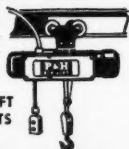
Skilled hands are never kept waiting, never tired by needless work — push buttons do it all! The P&H Hevi-Lift, with capacities up to 15 tons, brings every advantage of "thru-the-air" handling to all types of plants. For advice on your specific needs, consult a P&H Hoist Engineer . . . or see bulletin at left.

The "Extras" Are STANDARD EQUIPMENT, Added Values on P&H Hevi-Lift Hoists

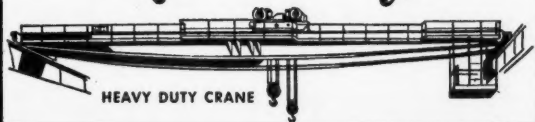
- ✓ Shaved gears for lifetime service . . . all bearings grease-sealed.
- ✓ Thermal overload protection against motor burn-outs . . . twin brakes for extra safety.
- ✓ Motors specifically designed and built by P&H for hoist service — high starting torque, frequent reversals, etc.
- ✓ Effortless push-button control . . . available for all motions and with variable speed feature.
- ✓ Transformer provides 110 volts at push-button.
- ✓ P&H's true motor ratings assure against failure at full capacity loads and speeds.



ZIP-LIFT HOISTS



HEVI-LIFT HOISTS



HEAVY DUTY CRANE

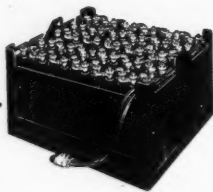
P&H ELECTRIC HOISTS
4643 West National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

HOISTS • WELDING ELECTRODES • MOTORS • EXCAVATORS • ELECTRIC CRANES • ARC WELDERS

POWER FOR TRUCKS THAT MUST WORK—



24 hours a day... EVERY DAY!



In Industrial Trucks, EDISON Nickel-Iron-Alkaline Batteries Give You These Important Advantages

- ★ They are durable mechanically; grids, containers and other structural parts of the cells are of steel; the alkaline electrolyte is a preservative of steel.
- ★ They can be charged rapidly; gassing cannot dislodge the active materials.
- ★ They withstand temperature extremes; are free from freezing hazard; are easily ventilated for rapid cooling.
- ★ They are foolproof electrically; are not injured by short circuiting, reverse charging or similar accidents.
- ★ They can stand idle indefinitely without injury. Merely discharge, shortcircuit, and store in a clean, dry place.
- ★ They are simple and easy to maintain.

Illustrated above is a material-handling job for which trucks must be kept on duty 24 hours a day, every working day. It is the kind of job in which battery industrial trucks excel because of their dependability and economy.

With batteries exchanged two or three times a day, the truck is kept continuously supplied with power. While one battery is being charged, another operates the truck.

IDEAL POWER CHARACTERISTICS

The truck starts instantly, accelerates smoothly; operates quietly; gives off no fumes; consumes no power during stops. Thus, it makes efficient use of power, and the current used for charging its batteries is the lowest-cost power available. Its electric-motor drives have a minimum of wearing parts and are inherently simple and trouble-free.

A battery industrial truck is most dependable and most economical when powered by EDISON Nickel-Iron-Alkaline Batteries. With steel cell construction, a solution that is a natural preservative of steel, and a fool-proof principle of operation, they are the most durable, longest lived, and most trouble-free of all types of batteries. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada: International Equipment Company, Montreal and Toronto.*



EDISON
NICKEL • IRON • ALKALINE
BATTERIES

FLOW

Specially designed trucks?

Standard trucks?

get the advantage of both with

fairbanks



More and more truck buyers are matching trucks to specific jobs and at the same time getting the benefits of standard equipment by using Fairbanks Trucks. This is possible because of the unusually large variety in truck designs offered in the standard Fairbanks line. For example, there are over 40 different types of two-wheel hand trucks alone that are standard in the Fairbanks line of trucks. Each is designed from

on-the-job experience to put the maximum possible speed and ease into specific load-handling assignments. Write for illustrated catalog 50 which shows the complete line of over 200 types of trucks. The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; 520 Atlantic Ave., Boston 10, Massachusetts; 15 Ferry St., Pittsburgh 22, Pennsylvania; 748 M&M Bldg., Houston 2, Texas.



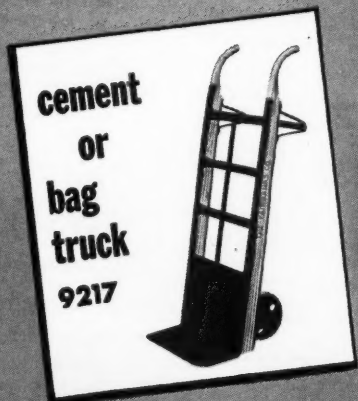
For handling boxes, cases, and odd sized merchandise on the floor or shipping platform. 4 sizes. Lengths 48" to 60".



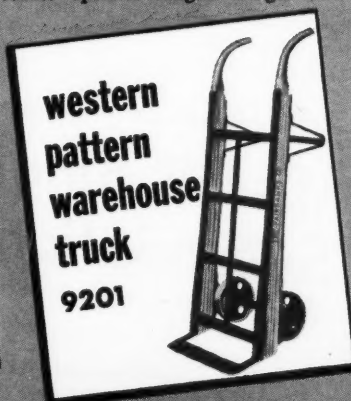
Designed for handling feed bags, also suitable for handling cases and baled goods, plumbing and heating supplies. Extra long nose and steam-bent handles reduce operator fatigue. Length 58".



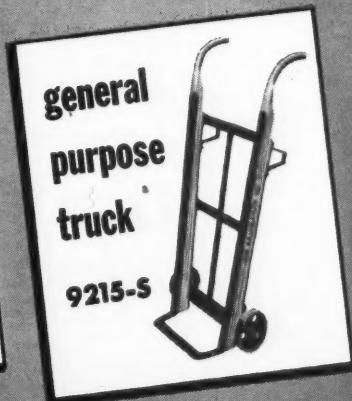
All steel one-man truck with adjustable side lock, fits all barrels. A tough, sturdy truck for moving loads up to 1000 lbs. quickly and safely. Length 58".



Heavy nose of $\frac{1}{4}$ inch steel plate provides strength and smooth, flat surface for handling cement, fertilizer, and other materials in paper or burlap bags without damage. Length 52".



An unusually handy truck for moving big, little, odd-sized boxes and cases with ease. Wheels inside of handles for convenience in tight working spaces. 3 sizes. Lengths 48" to 54".



A light-weight but rugged truck that is ideal for a variety of uses in handling small lot merchandise. For stores, light manufacturing or delivery service. Steam-bent or straight handles. Length 46".

American industry rolls on

fairbanks trucks

HERE'S WHAT A *Flow* SUBSCRIPTION DOES FOR YOU!

"Men in the News"

YOU ARE NEWS WHEN you make a change or do something unusually well, others like to know about it. FLOW tells them. When you see others promoted, solving a difficult problem, performing an outstanding job, your own efforts are stimulated. So in FLOW, you read about men on their way up—how they plan, experiment, put new ideas into practice to speed production and profits for their company.

When you or your men have any news that might prove of interest to FLOW readers, send it in. By helping others, you help yourself. Because FLOW measures the value of contributions on the merits of the contribution itself, it serves all—and that is one of the secrets of FLOW'S great success.

"Catalogues, Literature and Bulletins"

YOU ARE INFORMED HOW can you compare values if you do not have the latest published information and the latest prices?

This department keeps FLOW subscribers informed of all helpful literature published for free distribution in the field covered by FLOW; a much more comprehensive and valuable service than you may imagine.

FLOW not only reviews almost every such bulletin published, and, if helpful, lists it, but also offers to obtain it for the subscriber.

Such helpful service saves FLOW subscribers time and trouble, as they merely make their request on the coupon appearing in each issue of FLOW, and FLOW does the rest without cost or obligation.

"New Products"

YOU ARE AHEAD THIS department alone should warrant your subscription to FLOW—because big savings, fresh opportunities, quick advantages come only from new or improved products. Since every manufacturer is constantly making improvements, the buyer first to know about them has an enviable advantage.

Since FLOW field men are usually first to know of these new products and developments, FLOW readers are usually first also to know about them.

FLOW does not wait until a new product is on the market, but combs industry to see what is coming out. Anything planned to facilitate the movement or handling of materials is quickly reported—anything that in any way can make your job easier and profits more certain, or helps labor to perform its task with more certainty and less backache.

"Men Wanted, Jobs Wanted, Lines Wanted"

YOUR OPPORTUNITIES YOU never know when you may need quickly a different job, another man, or a new line—so FLOW runs this department each month to help you get what you need without delay.

Here you find good men looking for better jobs—better jobs looking for good men—new lines to increase sales—opportunities for everybody—all presented in an economical orderly form for ready reference.

If you have the job, but no man—or the man but no job; if you have a new line but need distributors—or have distributors but need lines—consult this department each month. It is your opportunity column. Watch it. Advertise in it.

Don't Miss a Single Issue Start Your Subscription Right Away

You'll enjoy *Flow* as you do your Sunday paper . . . It's full of news stories and pictures from the production front.

RETURN SUBSCRIPTION COUPON NOW! →

Please enter my subscription for FLOW magazine for

<input type="checkbox"/> 1 year	\$3.00
<input type="checkbox"/> 2 years	\$5.00

Canada, \$4.00 per year; 2 years, \$8.00; Foreign \$5.00 per year flat.

My name _____ and _____ Title _____

Check enclosed ☐ My company's name _____

Send bill ☐ My company's product _____

Street address _____

Our order No. _____ City _____ Zone _____ State _____

FLOW

LEWIS-SHEPARD FORK TRUCKS

*for Maximum
Visi-bility
and Maneuver-ability*

L-S Fork Trucks save floor space! Right-angle pile in narrower aisles! No backing or filling! Their Maximum Visibility prevents load damage . . . provides operator with an unobstructed view at all times. Compact, Rugged, Speedy, — they handle pallet and skid loads with utmost efficiency!

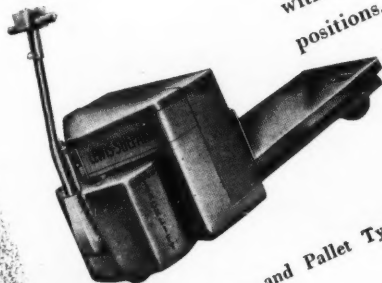
**WHY BUY LESS
THAN THE BEST?**

Electric
Gasoline
Gas-Electric
Models
2000-4000 lbs.
Capacity



"They Pivot on a Platter"

NEW... POWER JACKLIFT
100% Electric — 100% Driving,
100% Lifting, 100% Braking
with Handle Vertical and in all
positions.

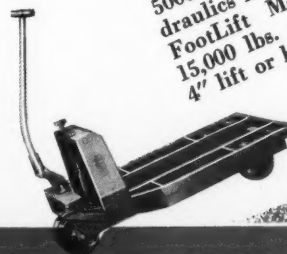


Platform and Pallet Types



TRADE
MARK

**L-S Hand Operated
JACKLIFTS and HYDRAULICS**
L-S Hand Lift Trucks
are built for long service.
JackLifts, 3" lift in 2500-
5000 lbs. capacity. Hy-
draulics in HandLift and
FootLift Models, 3500-
15,000 lbs. capacity with
4" lift or higher.



Hydraulic
FootLift
Model
5000 lbs. Cap.

LEWIS-SHEPARD PRODUCTS INC.

118 WALNUT ST., WATERTOWN 72, MASS.

REPRESENTATIVES IN PRINCIPAL CITIES CONSULT YOUR PHONE DIRECTORY

SINGLELIFTS • HYDRAULIC HANDLIFT TRUCKS • JACKLIFTS • SKIDS • FLOOR TRUCKS • PALLET TRUCKS • STACKERS • PALLET STACKERS
PRODUCTION LIFTS • CRANES • DERRICKS • PORTAL CRANES • PORTAL CRANES • PORTAL CRANES • PORTAL CRANES



MERCURY

FORK TRUCKS

2000, 4000, 6000 LB.
CAPACITIES

MERCURY "JEEP":

Powerful—yet the most compact fork truck made. Ideal for smooth operation in confined areas. 2000 lb. cap.

Rugged, easily maneuvered and round-the-clock dependability—a cost reduction combination engineered into every Mercury fork truck!

By handling more tonnage with greater ease, spotting loads quickly and accurately, tiering to ceiling height—Mercury fork trucks conserve manpower, economize on storage space and speed the flow of materials.

Consult Mercury—learn how these handling economies can serve you. Write for Bulletin 201-6, containing complete description of the full Mercury line, or ask a Mercury Sales Engineer to call.



These Features, Pioneered and Perfected by Mercury, are Standard on all Mercury Fork Trucks—

HYDRAULIC HOIST:

Less than 50% of the usual moving parts.

ALL-WELDED FRAME:

No rivets to weaken sections.

SNAP-ACTION CAM OPERATED CONTROLLER:

Eliminates injurious arcing.

UNIT CONSTRUCTED DRIVE ASSEMBLY:

Motor and drive are one unit.



MERCURY "YANK":

Most powerful fork truck in the Mercury line. Built for severe service and unusually heavy loads. 6000 lb. cap.

MERCURY "YAK":

Next in tonnage capacity is the "Yak." Ruggedly designed for continuous heavy duty. Handles loads up to 4000 lbs. with ease.

THE MERCURY MANUFACTURING CO.
4154 S. HALSTED ST., CHICAGO 9, ILLINOIS



MERCURY

TRACTORS — TRAILERS — LIFT TRUCKS

"WHY HAVE A 'SAD SACK' FOR A HOIST?"



ANOTHER PRODUCT OF



LO-HED ELECTRIC HOIST

Weight 225 lbs. (Plain trolley), 195 lbs. (Bolt Suspension)

Motor—HEAVY-DUTY hoist and crane type with high starting torque.

Gearing—HEAVY-DUTY spur.

Lowering Brake—HEAVY-DUTY Weston automatic.

Electric Brake—FULL LOAD torque capacity.

Control Pendant—HEAVY-DUTY Push Button Station.

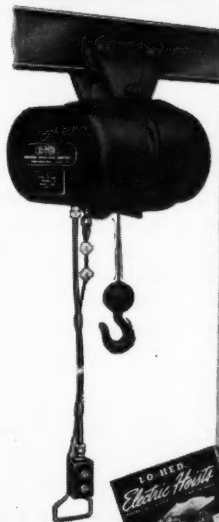
Control Cord—HEAVY-DUTY super service, rubber covered, reinforced by pull-cable.

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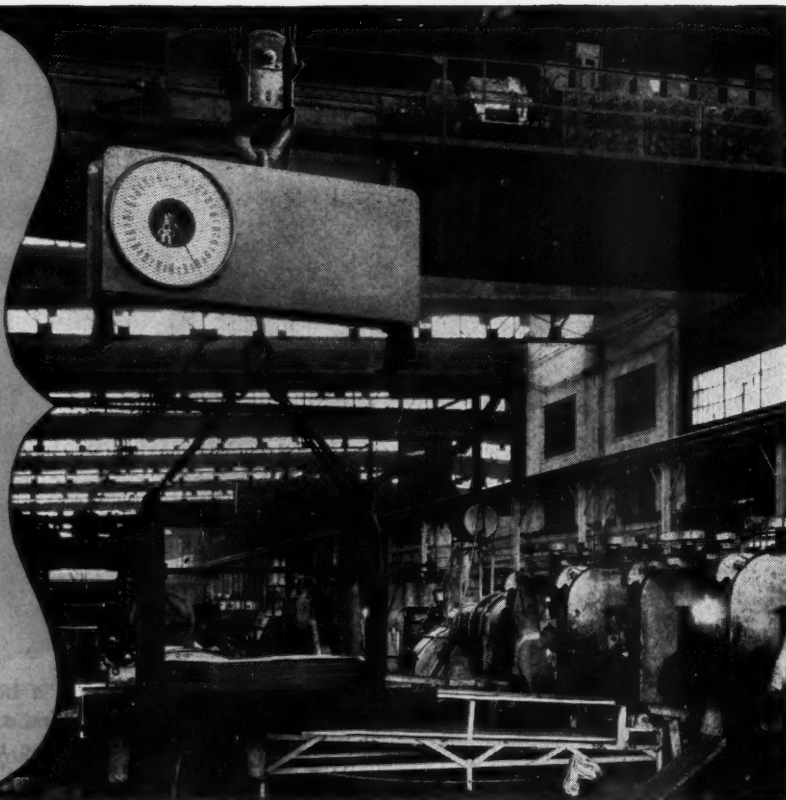
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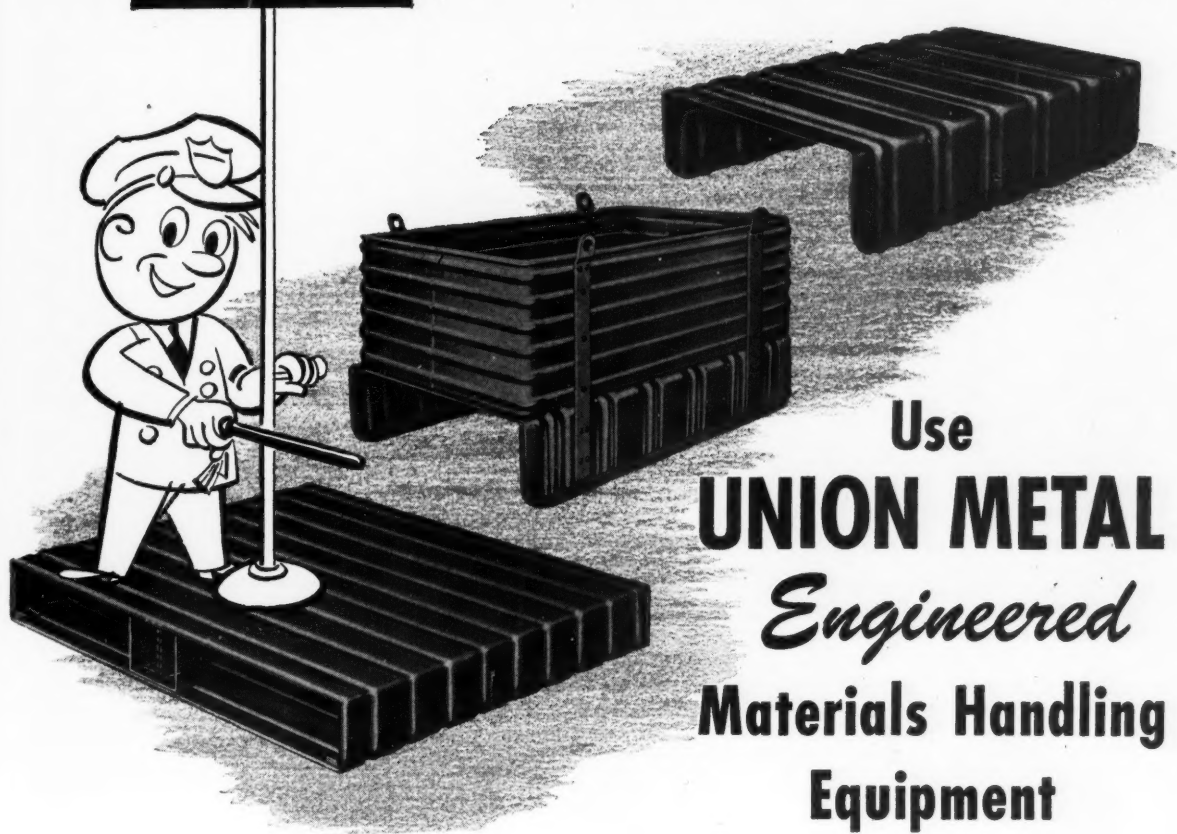
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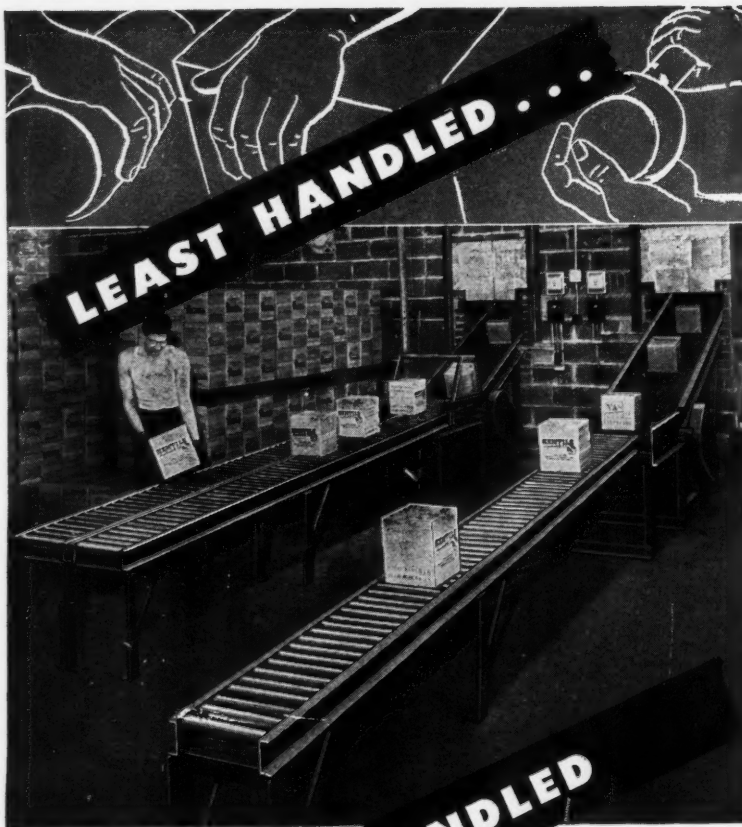
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I wonder if you could refer me to manufacturers of such equipment so that we may communicate with them and get their ideas on how this can best be accomplished. —J. A. Connell, Resident Engineer, Liberty Mutual Insurance Company, Boston.

Reader Connell has been referred to several likely sources for the needed information.—Ed.

To FLOW:

Sold On Handling

We have been reading your highly instructive magazine since the first issue. We used to think that our business was different but your publication has successfully aided in selling our management on a materials handling program.

We would like to know if there are any materials handling groups open to membership to new-comers in the field, similar to the Society of Automotive Engineers in the motor vehicle field.

We would appreciate the names of the groups and also the addresses of the proper people from whom to get additional information.—A. K. Strong, Plant Engineer, Columbian Rope Company.

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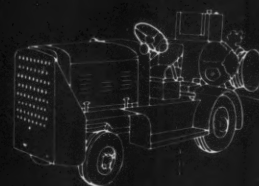
High Praise

In my opinion, FLOW contains a great deal of worthwhile reading. —Earl Bunting, President, O'Sullivan Rubber Corp., Winchester, Va.

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COVER PHOTO—The President of the National Association of Manufacturers, Earl Bunting, who has written a guest editorial this month. See "A Tool For Management," page 21. His opinions are backed by sound practices in his own business.

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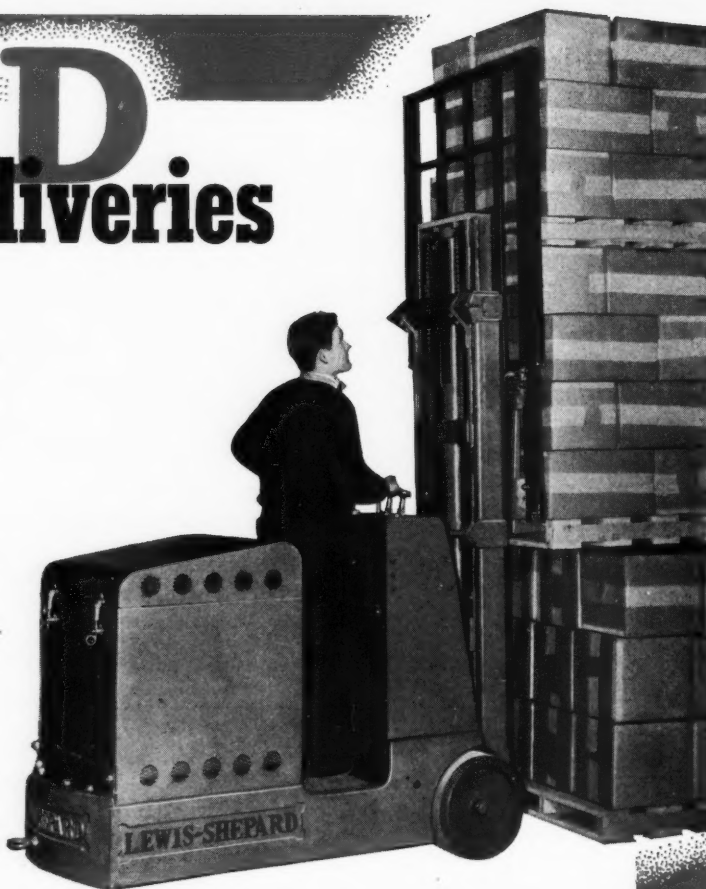
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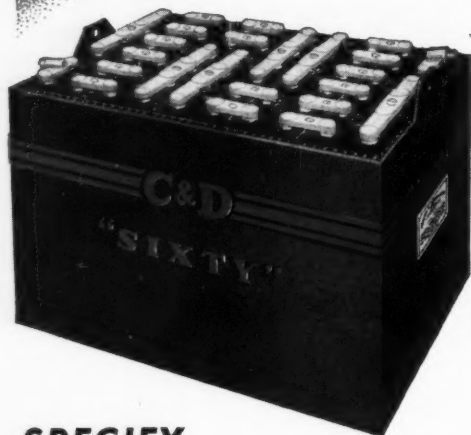
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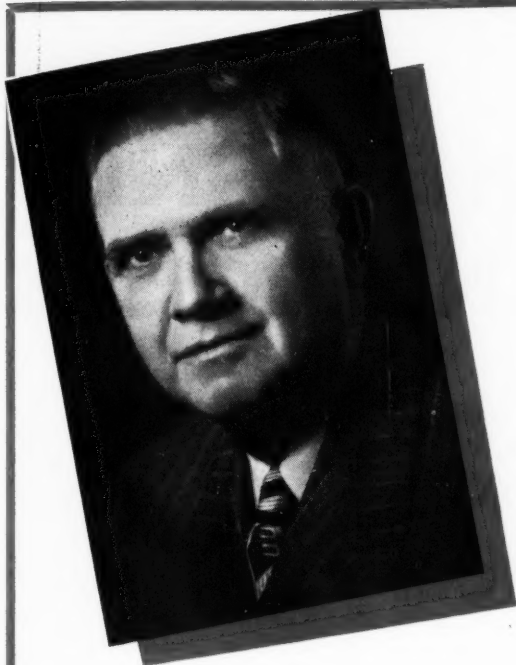
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A Tool for Management

By **EARL BUNTING,**

President, National Association of Manufacturers
President, O'Sullivan Rubber Corporation, Winchester, Virginia

A message that applies to all industry

FLOW Magazine is to be commended for its part in arousing the interest of all Industry in so vital a subject as material handling.

The truth is still to be recognized by a large segment of management, in all fields, that more efficient operation of industrial plants is absolutely necessary in order to reduce the ultimate selling price of commodities in face of rising labor and material costs; and that efficient material handling is a direct means to this end.

Here's a specific example taken from our own operation, following an extensive modernization project of material handling operations. After absorbing a wage increase of 18.7 per cent on straight time, we have effected a reduction of 38.5 per cent in total cost of direct and indirect labor supervision. This speaks well for the benefit derivable from properly engineered material handling methods.

Here at O'Sullivan we have completely modernized our material handling procedures by revising each department in relation to the over-all manufacturing requirements. For example, we installed one mile of powered conveyors for handling heel cans. In our new and modern receiving department we made extensive use of pallets and fork trucks in transportation and storage operations.

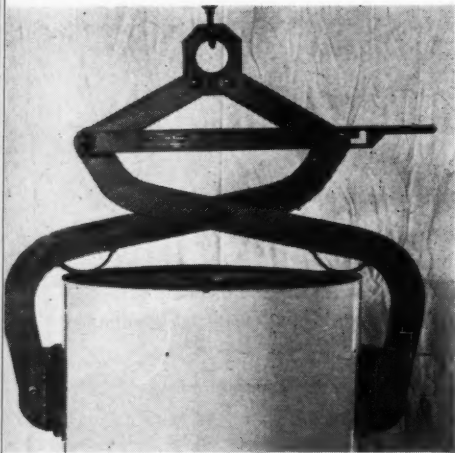
Carbon black, a reinforcing ingredient used in making black products, used to spread through the plant under our old system of mixing, often spoiling other mixes of another color. We now have this problem licked by the use of a 32-foot diameter steel storage tank on the roof of our mixing department. The tank has two compartments and holds approximately 280,000 pounds. Carbon black is fed into the tank by a completely enclosed outside conveyor and a 95-foot centrifugal discharge bucket type conveyor. The conveyor starts in a shallow pit below the closed tank car, and is dust and weatherproof throughout. The handling capacity of the new system is 150,000 pounds per hour.

These highlights of our modernization project explain the previously cited saving of 38.5 per cent. This is figured on a three-year basis prior to installation of our modern material handling equipment. The latter has also been a big factor in the steady reduction of our plant's accident frequency rate.

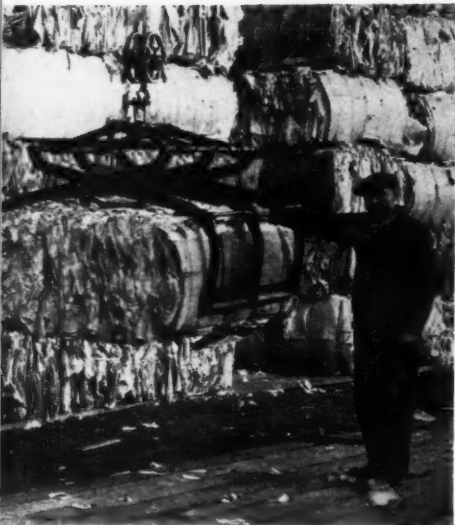
Proper material handling is, in my opinion, one of the most potent tools management may wield for greater efficiency in production and a stronger competitive position.

THE HANDS OF CRANES AND HOISTS

The grabs on your cranes and hoists are production machines, which must be adapted to the varied products being handled. This review of widely used, basic designs is given to help you determine if your overhead handling equipment has the right grabs



Ice-tong grab with a cross-bar.



GRABS have rightly been called the hands of cranes and hoists—the hands that grip the loads, hold them during transport, and then release them with safety to the personnel and to the material at the desired location. There is practically no limit to the variety of shapes to which these mechanical hands are adapted—barrels, boxes, sheet steel, bales, rolls, tubing, coils and others. That makes them machines much like any other production machines. This point of view will be helpful when considering the application of grabs.

The various styles are of course designed with a view to increasing safety and efficiency, as determined by the product, the space available, the type of operation, and the weight of the load. Grabs might be divided into three groups, as follows:

1. The simple type which is applied and released by an operator.
2. The intermediate or semi-automatic grab which a man will apply but which is self-releasing.
3. The type which is both self-applying

and self-releasing. As stated, the reason for the more complicated grab is greater efficiency and safety. Its higher cost is warranted by the function it performs. While a simple grab requires a man at the point of application, the more complicated unit is operated from a remote point.

Safety, Space Conservation, Efficiency, Aid to Labor

When planning a grab, the first essential is to design one which will grip the load safely. The second element of importance is a design which will permit the placing of the object lifted with the least use of space. Efficiency is a third point, with the labor-aiding factor a fourth.

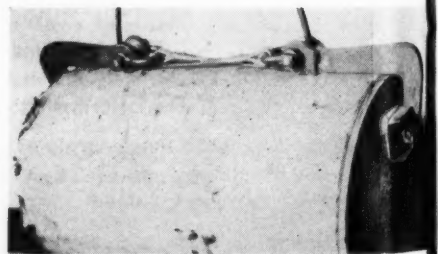
Having designed a grab strong enough to grip the load, all sorts of mechanisms can be used to obtain the result. In good design, however, two cardinal points determine the desirable grab—the simplest mechanism that will also occupy the least amount of space.

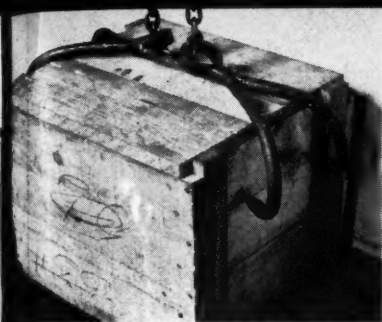


Waste paper can be pierced by grab.



Simple grab. Chain applies pressure.





4

In other words, the uppermost thought must be a design that will result in the least possible complications. There are literally hundreds of grab designs, but the criterion is ever: simplicity, safety, efficiency, and the labor-aiding and space-conservation factors.

Another point. In most engineering layouts grabs are often the very last thing considered. The success of many a hoist and crane installation has been nullified by omission of the proper grab. By the same token, the timely consideration of correct grabs on many cranes has eliminated the need for additional warehouse space, has speeded up operations and has eliminated the need for additional handling equipment. In certain instances, the type of grab adopted will affect both the design of the crane and the entire building layout.

Three Principles

The following part of the discussion presents various types of grabs, starting with the simple and progressing to the complex types. This information may be of value to the plant or material handling engineer as a guide in correct grab application.

Probably the first "grab" was a rope of some type wrapped around the load, though no exact data are available on the history of the subject. It is assumed that the simplest grab is the ice-tong type, whose principles are readily evident, though its design is somewhat complex.

A typical example is Figure 1. With the ice-tong, the object lifted is either pierced or gripped. The exact pressure applied varies widely with the object. With any simple ice-tong, more pressure can be applied by using more leverage in the part of the tong above the pivot. Figure 1 shows the grab

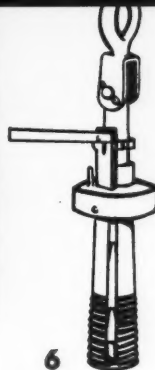


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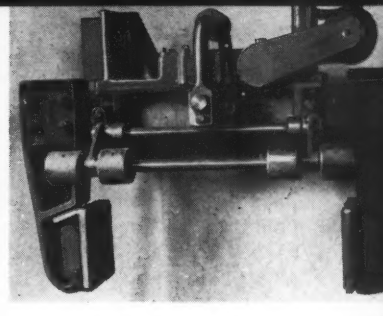
holding the object by friction, which is important where the product must be protected against damage.

In the case of bales of waste paper, on the other hand (see Figure 2), the same type of grab can dig into the material with points. The same principle can be applied to material in the steel, paper, aluminum and other industries. Figures 1 and 2 merely illustrate some typical uses.

The grabs discussed so far are of the semi-automatic type—that is, they are self-releasing from the load when the hoist hook is lowered. The self-releasing action is obtained from the cross-bar shown. It is the addition of that cross-bar which changes this grab from a simple ice-tong into the intermediate or semi-automatic type mentioned earlier. By the application of a special actuating mechanism (not shown) this same grab may be made fully automatic. When to use a simple, semi-automatic or fully automatic grab? The answer depends on several conditions,

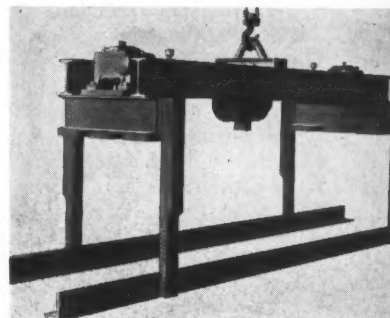


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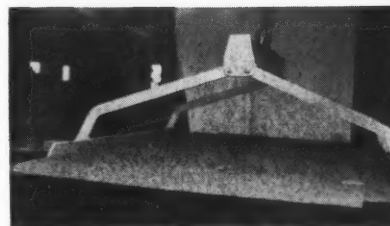


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8



9



10



4

Simple chain grab applied to a box.

5

Fully automatic grab in processing.

6

Expanding grab, wedge principle.

7

Example of typical motorized grab.

8

Motor is used for adjusting grab.

9

Simple grab supporting pan carrier.

10

"Supporting" grab with end wheel.

among them (1) frequency of use, and (2) ease of access to the load.

Other simple grabs, not of the ice-tong type, are shown in Figures 3 and 4. Here the pressure is applied by means of the chain which pulls the gripping points together as the load is lifted. Although these photos show applications to paper and a wooden box, they are used for a variety of different objects. Cylinders of tar is one among many possible examples.

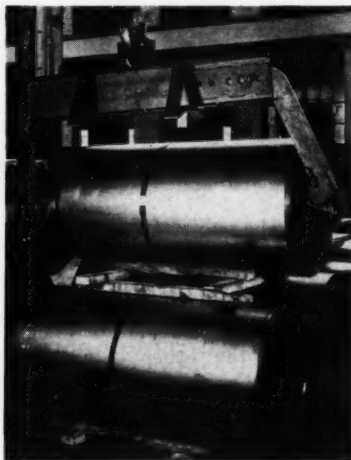
So far, two of the many different leverage principles that can be applied have been shown. It would take reams of paper to show them all. This makes it evident that a grab engineer should be consulted when the purchase of some below-the-hook device is considered for a crane or hoist. When the recommendations for the design come from a specialist in the field, the cost of "correcting later" can be saved.

Figure 5 shows a fully automatic grab, which is gripping two coils of brass. Here a new principle is used. The pressure is applied by a gear lever exerting force against the rack. The pressure is applied to the coils in much the same manner as a bottle capping machine applied it in the old days of beer-making in capping bottles.

On the side of this grab you can see a small box, and a small rod hanging from one of the levers. This combination of rod and box is the fully automatic mechanism mentioned previously. By reason of that, the operator really lowers the load, and the upper half of the grab engages the lower half, thus removing the grab from the object when the hoist hook rises. In reverse, when the grab is placed on the load, light over-running of the hoist hook causes the upper half to disengage from the lower half. This allows the upper half of the mechanism to rise and creates the necessary grip.

The principle of this grab is such that terrific pressure can be applied to the object lifted, with a minimum amount of headroom used in getting the grab to operate. This same principle also permits the lifting of a very wide range of dimensional variations with a minimum headroom, and with much greater safety than with grabs designed according to either of the two principles previously described.

The list of principles could be extended for a good many columns. In the interest of brevity, one more will be indicated—Figure 6. This



11—Variation of a "supporting" grab

grab enters the core of a roll of paper (standing upright) and grips the material by causing a serrated sleeve to expand against the core. The pressure is obtained by means of wedges inside the serrated sleeve.

Motorized Grabs

The discussion has so far dealt with grabs which can be varied in size (for a specific job), but which are somewhat limited in their size range due to the fact that the leverage is not constant when loads of different sizes are lifted. In other words, with the type of grab which grips by means of leverage the forces imposed on the lifted load are dependent on the weight of the material; this force is transmitted to the load by means of the leverage and necessary frictional contact between the material and the grab. To overcome the condition caused by a leverage that is not constant (and to make a unit for handling a wider range of objects), grabs have been motorized. This type permits adjustment to the size of the object by means of the motor without affecting the leverage or gripping ratio or pressures.

In addition, the motorized grab eliminates the need for semi-automatic or automatic attachments and makes it, in most cases, possible to apply it from a remote point. In some instances, however, even with a motor-driven grab a floorman is necessary.

There is a side to the subject of

the floorman which is not as often recognized as it should be. It should be noted that his elimination does not, in all cases, represent a clear-cut saving. The time required by a crane operator to attach the grab without a floorman is in some instances so great that the total number of manhours is appreciably reduced by the use of the floorman.

A typical motor-operated grab is shown in Figure 7. This one is designed so that the only function of the motor is to move the gripping legs in and out, thus adjusting the grab to different sizes of rolls. In doing that, there is no change in the headroom required, or the space required above the object. It can be seen that this would not be true of the tong-type of grab or most of the mechanical styles previously described. After the load has been gripped with the motorized grab, the motor is shut off, and the load is then raised. The actual grip against the object, however, is obtained by mechanical means which increases the pressure should the object start to slip from the grab. Thus, if for some reason the power to the crane is shut off, the load would not be dropped. Of course there are also types of grabs where an added motor is used to apply pressure (instead of the mechanical method just described).

In some operations it is necessary not only to lift the load but to rotate it in order, for example, to permit going down through narrow aisles. Or the reason may be to place the material for subsequent easy handling. In such instances the motor-driven grabs are equipped with built-in motor-driven turntables. After the material has been lifted with this equipment, the crane operator is enabled by means of the additional motor and control to rotate the entire load.

Although the word "grab" means to grasp, and the latter is associated with pressure, some motorized grabs are made for adjusting reasons only. A typical application is shown in Figure 8. Here the motor is used for opening or closing the grab jaws so that they can get under an object such as a bundle of sheet steel, aluminum, plywood, plasterboard or similar

(Turn to page 66)



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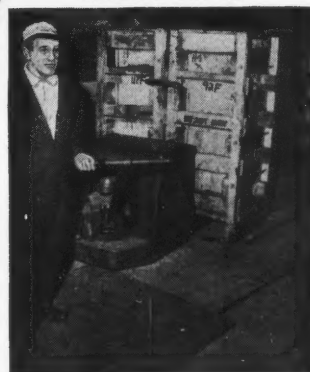
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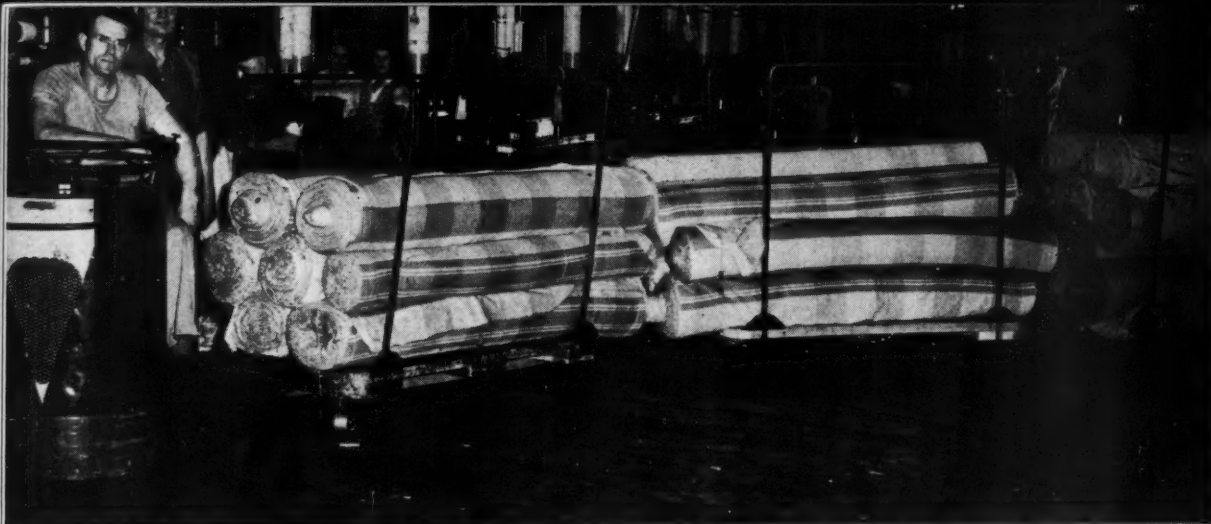
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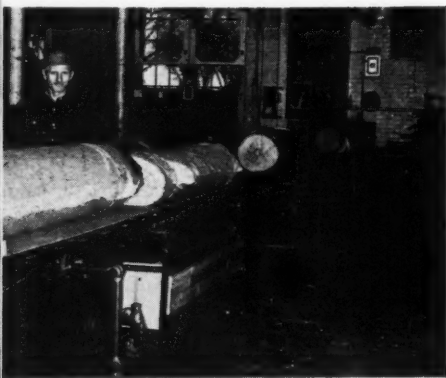




From looms, rolls of blanket cloth travel by tractor-train (in quantity) to the trimming room.

CONVEYORS — POWERED TRUCKS CASTERED EQUIPMENT

Old BUILDINGS..



End of conveyor which carries rolls across yard to start of napping operation on 2nd. floor.



In the 100-year-old buildings of this New England textile mill the latest type of material handling devices are speeding the flow of materials. The successful adaptation of this modern equipment may give you some valuable suggestions.

SOME of the departments of The Nashua Manufacturing Company, Nashua, N. H., are housed in buildings 100 years old, and the material handling devices employed are as modern as today. For a good many decades this company has been known as manufacturer of blankets, sheets, pillowcases, industrial fabrics, and its Indian Head cloth is believed to be the oldest branded fabric in the country. The specific subject of this description is one member of this

well-known family of products—Nashua blankets.

As the rolls of blanket cloth are doffed off the looms, they are lowered on rubber-tired two-wheel dollies. The rolls, averaging about 80 inches in width 110 pounds in weight, are thus wheeled across an aisle where they are loaded on 4-wheel trailers equipped with pipe racks on the sides. Four to six of these trailers are coupled into a train which is hauled by a light-weight powered truck to the trimming room. The maximum haul may be between 700 and 800 feet, and the tractor-train methods avoids the movement of small lots over relatively long distances.

Miles of blankets are moved on castered trucks. These are receiving cloth from felting.

FLOW

Thus the inspection and trimming department, next in line, is supplied with sizable loads on each haul. Upon completion of the inspection operation, individual rolls are transferred to 1-2-1 trailers for short moves to weighing and tagging. The material is then deposited on an inclined platform from which it rolls, via gravity slide, on a belt conveyor about 24 inches wide. A section of inclined and cleated conveyor elevates the rolls, at the start of this movement, from the basement level to a higher level.

Until the material enters this conveyor, it has advanced in a straight line (east to west) in the same building and on one floor; the conveyor then moves the rolls at right angles in a direction that is directly south. The destination is a building that is approximately 300 feet across the yard. This space is spanned by the covered convey-



Blankets advance from center of room to walls, are delivered by conveyor to storage. Note Tray.

ers, in loose folds on 4-wheel flat trucks (app. 32" x 72") which are positioned on the opposite side of

each performing one step in the napping cycle. Still in folds, the cloth is received from the finish napper (or felter) on the same kind of load carrier. The completed loads are then advanced to the nearby inspection room, the last one in the west end of the building.

As the cloth is unwound during this operation, it is run through slots in the floor (from four machines) to the cutting room on the floor below. The cut cloth is here deposited on two rack-type 4-wheel hand trucks set up to the left and right of each cutting table.

The main flow of the material, from this farthest point on the second floor, is again straight-line (west to east) through a series of operations. Some intermediate moves between work stations are of particular interest. In the blanket room immediately adjoining (actually three connected rooms totaling about 300 feet in length)

or housing, and the line enters the building across the way on the second-floor level.

The arriving rolls pass over a 90-degree section of gravity rollers which feed to a belt line running at right angles. The latter extends for about 75 feet into the napping room, where the rolls are removed at right angles to inclined tables feeding to "set makers" (unwinders). From these the cloth is delivered via powered overhead roll-

the room. (A "set" is a batch of six rolls.)

After the initial napping on this floor, the sets are sent by elevator to additional napping machines on the floor above, where this operation is completed. On the third floor, the flow of the material is again from east to west, as in the building across the yard. The 4-wheel flat trucks serve as convenient load carriers on the short moves from machine to machine,

S. New METHODS

Diagram of layout of conveyor which moves blankets from all production stations to warehouse.



the loads of cut cloth are deposited on 18-inch-high stands beside the sewing machines where the blankets, depending on the grade, are either bound or stitched.

The sewing machines, it is important to note, are located on both sides of the main aisle. From here the flow of the material is "outward" to the wall on each side of the room—not from the walls to the center aisle. The reason for this involves an interesting conveyor installation, soon to be described.

The sewing machine operators simply dispose of the blankets by running them through the machines—that is, the material drops from the sewing machine tables into concave-bedded rectangular receptacles, one at the discharge end of each machine. The folding operators remove the sewn blankets from the receptacles, fold them and lay them up on tables in the required amounts.

By this time the blankets have advanced from the centrally located sewing machines to within a few feet of the wall on each side of the room—and in this space circles an overhead chain-type trolley conveyor. As can be seen from one of the photos, tray carriers (2'3" x 3'4") are suspended from it at waist height. These trays are spaced on 12-foot centers, and the line (which has variable speed control) is usually run at approximately 30 feet per minute. The dimensions of the tray carriers is adequate for holding two stacks of blankets. A noteworthy feature of the carriers is the overhanging guards (see photos), which prevent grease or waste from dropping on the blankets being conveyed. Thus the installation also affords adequate protection for a product that must be guarded against soiling.

Once on the trays, the blankets continue their travel out of the blanket room from the numerous stations in the area. The over-all length of the closed conveyor circuit is approximately 2,032 feet, with a considerable portion of this accounted for by a part traveling through the adjoining warehouse (on the south side of the building).

Thus the conveyor provides a disposal method for the finished blankets that is continuous and

simple, and which contributes importantly to effective utilization of the available flow area. Several specific advantages of this method are apparent. 1. The conveyor moves in areas close to the walls, in space that would otherwise be little used. 2. Because the finished products do not return to the center aisle for outbound movement, this vital traffic artery is kept free for unfinished blankets being supplied from the cutting room. 3. With the absence of the customary two-way heavy traffic in the center of the room, there is no congestion, no waiting time for machines to become accessible for material, and no impatient demands for the return of empty load carriers to the point of origin. In short, the main aisle serves mainly for the supply function, and the material moves out along the walls.

As can be seen from the diagrammatic sketch of the conveyor line, Blanket Rooms No. 2 and No. 3 are separated by a room which is a combination elevator and service area. Here, the line travels close to the ceiling, leaving the floor space unencumbered for normal operations and traffic. In Blanket Room No. 3 (so indicated for convenience, though all three connected rooms are properly designated "blanket room") the line again dips to working height and circles the work stations in this area.

In this room certain grades of blankets are taken off the tray carriers for boxing and ticketing. Upon completion of these operations, the cartoned items are returned to the trays which then travel around a portion of the circuit before entering the warehouse.

The delivery line to the warehouse travels through a covered trestle from the west end of Blanket Room No. 3 (at right angles to the main line, as shown in the accompanying sketch). After clearing the 64-foot-long trestle, the line again dips to working level in the warehouse.

Each conveyor tray carries from 8 to 36 blankets, depending on their grade and bulk, or a maximum of about 50 pounds. Thus a continuous stream of goods is maintained between production and warehousing. The latter subject will be covered in a separate article in next month's issue.

Neat Drum Handling

Here is how special cutting oils and solvents are handled in the extensive yard area of an International Harvester

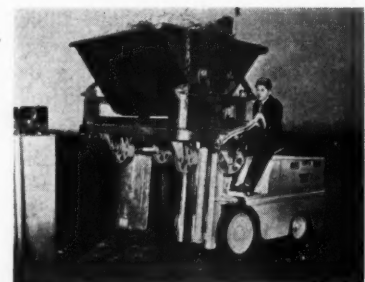


Co. plant. The fork truck first loads the trailer, which has welded angle iron retainers across its bed to prevent the drums from rolling off. During travel,

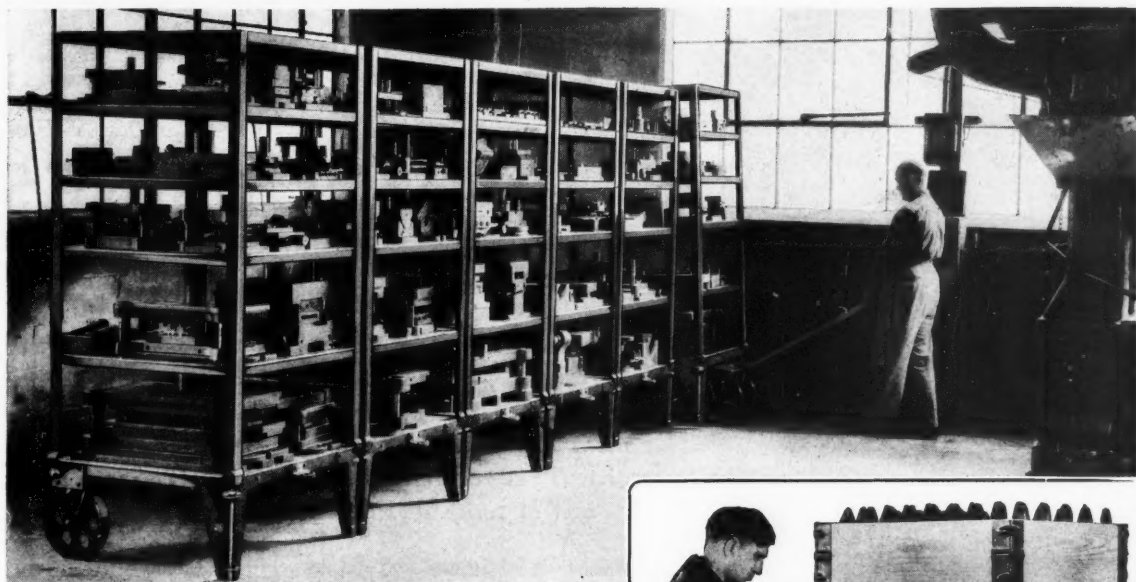


the truck transports one barrel on its forks, as shown in the first photo. At destination, the fork truck operator removes a barrel from the truck bed, places it flat on the ground, and then stands it erect as shown. Note that the barrel is picked up just below the first ring. The filled container is thus up-ended for insertion of the pump.—

Tilting-Body Scrap Trailer



Scrap removal at the Edward Valves, Inc., East Chicago, Indiana, is handled with a number of the pictured trailers. Positioned throughout the plant, the trailers, when filled with scrap, are picked up by fork truck and carried to a semi-trailer kept standing for the purpose. Here the unit is carried onto the trailer where its tilting body construction permits it to be unloaded directly.



Loaded Die Racks are quickly moved with the Turner Jimmy.

DIE RACKS ON WHEELS

Save You Time, Labor and Space
with the

TURNER SYSTEM OF MATERIALS HANDLING



Die Racks may be furnished with shelves inverted to form trays to hold materials.

You move dies without waiting for lift trucks when you have Turner System Die Racks mounted on Transports. That means an important saving in time and labor which you get with no other equipment. The hand Jimmy moves Transports with loaded Die Racks, Bin Sections, and Shelf Racks—quickly!

TURNER BIN SECTIONS ELIMINATE LOST MOTION

Stationary bins mean high handling costs—because putting materials IN and taking them OUT are wasteful consumers of TIME and LABOR. With the TURNER SYSTEM OF MATERIALS HANDLING you DELIVER THE BIN RIGHT ON THE JOB—and save the extra handling.

For longer hauls the loaded Transports are moved by power lift truck, crane or tractor.

The Turner System is adapted to all modern transportation equipment—works WITH your present methods and improves them. Designed for utmost efficiency in every operation.

WRITE TODAY FOR:

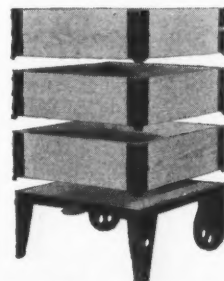
1. Descriptive catalog of the Turner System.
2. Details of our 60 DAY FREE TRIAL OFFER.



Transports are furnished with Floor Plate Deck (shown), Wooden Deck, Grid Deck and Flat Steel Deck.



Standardised, interchangeable units such as Bin Sections, Racks, Trays and Die Tables fit on the Transport, ready to be moved quickly to any part of your plant.



Bin Sections (Wooden-side or All-Steel) fit on the Transport. Sections are removed as load diminishes—added as load increases. No time wasted "diving" into wrong size bins.

FACTORY SERVICE COMPANY

4607 North Twenty-first Street

Milwaukee 9, Wisconsin

MAY, 1947

Continuous Flow

FOR AXLE HOUSINGS

**OVERHEAD CHAIN
CONVEYORS - CRANES
CASTERED EQUIPMENT**

To offset rising production costs through mass-handling methods, this manufacturer of passenger automobile axle housings adopted a continuous flow system. The installation coordinates operations in many departments located in several buildings, with these results: (1) Lower unit cost production. (2) Sharp reduction in scrap. (3) Better housekeeping.

THE Midland Steel Products Company, Cleveland, specializes in the fabrication of a variety of automobile parts. One of the principal items is passenger automobile axle housings produced for some of the country's leading makes of cars.

Until the war, the company used an intermittent, on-the-floor method of advancing the axle housings through numerous processing, fabricating and finishing operations. Severe production problems developed with the old material handling method. The speed of the machines (upwards of 200 pieces per hour) required the extensive and bulky stockpiling at each work station to prevent stoppages. This resulted in congestion at the production areas and at times made it difficult to avoid a spotty distribution of work in process. Another drawback was the distances which the housings had to be moved.

With the war's end, however, came a keener realization of the need for efficient material handling. Out of this realization grew a two-fold objective: (1) For competitive reasons it was paramount that handling costs be held to a minimum. (2) The expanded production schedules of automobile manufacturers (to meet the pent-up demand) called for the latest handling techniques to satisfy the stepped-up requirements.

Following a study by the company's engineering department, an overhead trolley-type chain conveyor system, consisting of three separate lines, was decided upon. Since December, 1945, the system has made possible the application of the continuous flow principle, with the thousands of parts now traveling to and from work stations in a steady, progressive movement.

Crane and Conveyor Handling

Raw stock (2,800-pound coils of steel strip) is delivered to the plant by semi-trailers which are unloaded by a 10-ton bridge crane in a passageway adjacent to the tube mill operation. The coils are temporarily stored in the unloading area and are delivered to the continuous tube welding machine by the same crane.

The housing sections leave the tube welding machine in cut-off lengths varying from 35 to 42 inches, approximately 3 inches in diameter. (The housings travel through subsequent operations as two separate sections until they are butt welded into a single unit in one of the final operations.) Depending on the length, the housing tubes may weigh from 16 to 28 pounds. From the mill, they travel

Extruded axle housing tubes placed on No. 2 conveyor at the Drawing Station.

No. 2 line dips through factory roof to upset station where tubes are removed.



a distance of about 25 feet on a gravity spool conveyor to the bulging station. Here, after the tubes are inspected, flash-trimmed, heated and bulged at one end, they are placed on the No. 1 conveyor line for movement to the pickling shed, located some 200 feet distant.

The No. 1 conveyor is a 660-foot-long closed circuit supporting 220 tube hooks on 36-inch centers. The line carries the rough-formed housing tubes from the bulging station at the rate of travel of 11 feet per minute. From work level it inclines to a height of 20 feet and, after passing through a wall opening, travels outside for about 100 feet. The tubes are thus cooled to the desired degree before descending to the pickling building.

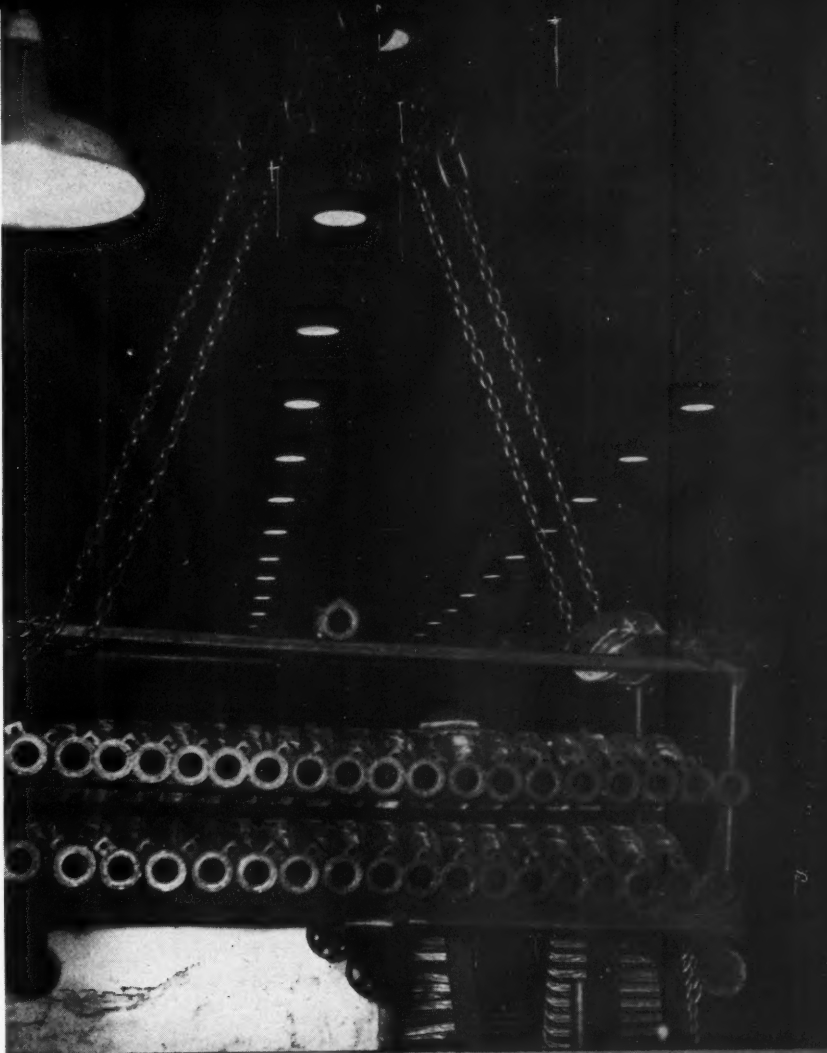
The incoming line extends the full length of the 100-foot-long building, making a U-turn at the far end. The return line passes over two 50-foot-long vats into which it dips to submerge the tubes successively. At the end of the last vat, the line makes a second U-turn to enter the rinse vat. It rises from this tank and, after a third 180° turn, leaves the building to return the pickled pieces for further processing.

Note that this conveyor coordinates operations in the mill department and the pickling building, while at the same time performing the entire pickling operation without the need of attention on the part of workers.

Interesting Conveyor Hooks

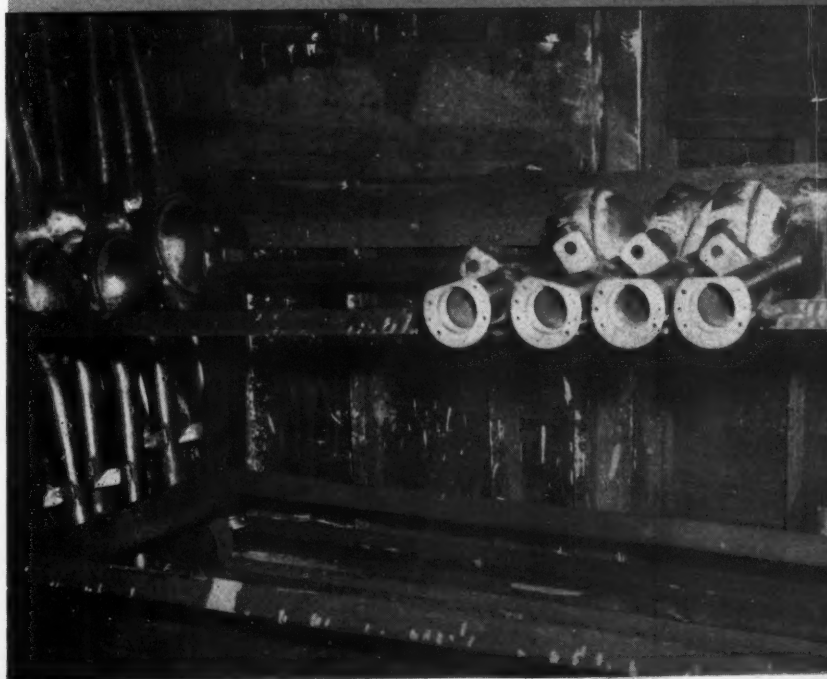
Usually, adapter hooks are designed to carry the product suspended from the conveyor chain. But here numerous pieces to be routed between closely spaced work stations required a method designed both for easy removal from and replacement on the line. Any method that involved fumbling or reaching on the part of the operators would be a serious production interference. Hence the company's engineers designed carrier hooks on which the tubular pieces could be stood upright, at hand height of the operators. The 3" diameter tubular pieces were well suited to this method of conveyance.

The carrier hooks consist of $\frac{3}{4}$ " by $\frac{1}{2}$ " monel metal bars 48" long to which are welded X-shaped bot-



Truck load of axle housings moved by bridge crane. Trucks are also hauled by tractor.

Wheel-mounted slide ways moves housings in angle iron tracks length of stock area.



tom cross-piece tube rests. The tubes are held in position on the rests by vertical 11" bars welded at the centers of the 12" cross-pieces. The four-way cross-piece on the No. 1 conveyor will accommodate four tubes on each carrier hook. Monel metal was selected for the hooks on this line to resist the corrosive action of the pickling solutions.

From pickling, the line returns to the starting point. The end point of the No. 1 line is situated midway between the bulging press, on the left, and the drawing machine, on the right. As a result, a minimum of motion is required to load the conveyor on one side and to unload it from the other.

An efficient flow arrangement is again illustrated at the drawing station. The pickled tubing is removed from the No. 1 line at the left of the drawing machine (within arm's reach of the operator), processed through the machine, and then transferred to the No. 2 line at the operator's immediate right. The convenient arrangement of the conveyors at this station results in an economy of motion, which favorably affects production.

From the drawing station the No. 2 conveyor travels at a rate of approximately 3 feet per minute,

moving up a 25-foot incline and out of the building. From here, the conveyor runs parallel to the building for a distance of about 200 feet. This section of the line clears a driveway in the yard, also a railroad spur entering the building.

The line travels over the factory roof and makes several turns before descending to the floor of an adjacent building at the upsetting station, the next operation in line. The length of this closed circuit totals 1,650 feet.

Carrier hooks on the No. 2 line are mounted on 18" centers instead of the 36" centers used on the No. 1 line. The reason is that the inclination of the No. 1 line into the pickling vats is steep and the 36" centers are required to prevent the hooks from touching when the line dips into the vats. Because this problem is not encountered on the No. 2 line, the 18" centers are used. Instead of the four-way cross pieces on the No. 1 conveyor, the No. 2 conveyor is equipped with a simple cross-bar, supporting two tubes to a hook.

A flow arrangement similar to that at the drawing station is used at the upsetting machine. The No. 2 conveyor delivers the pieces within arm's reach of the operators, maintaining a constant supply from

the other building without the need of cluttering production areas with intermediate storage. To anticipate emergencies, however, only small stockpiles need be carried at key points.

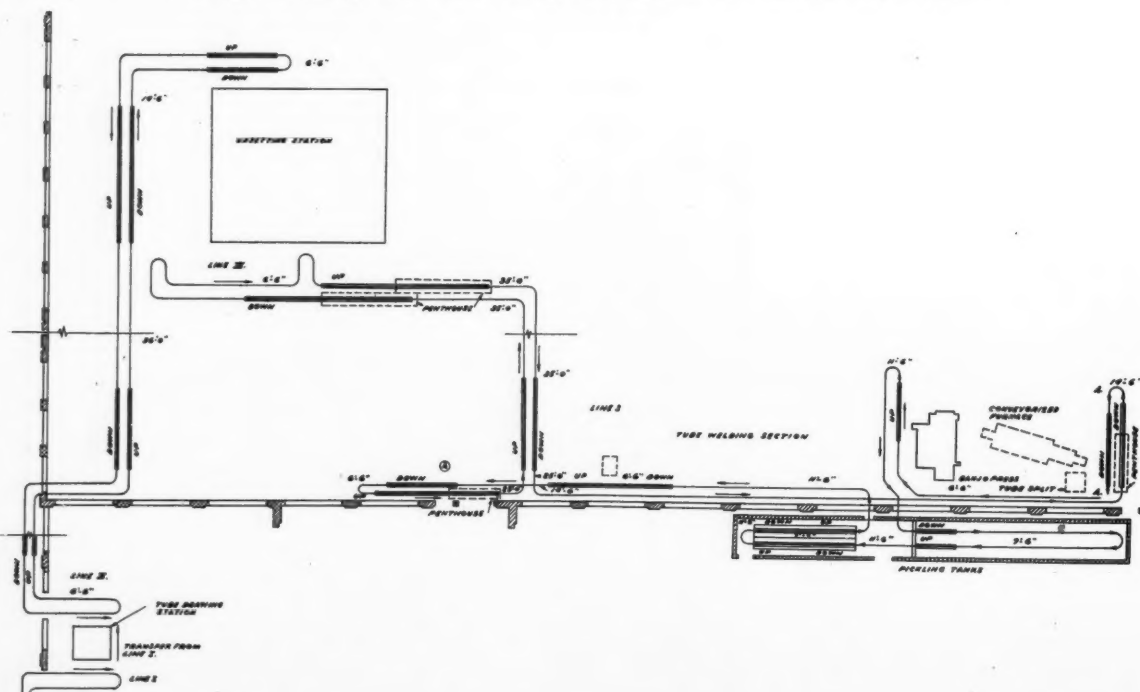
Transfer to No. 3 Line

The upset tubing (now with a flange formed on the end opposite to the bulge) is disposed of on the No. 3 conveyor located immediately adjacent to the final upsetting machine. This conveyor inclines through the factory roof and travels a distance of, roughly, 200 feet before descending to the next work station.

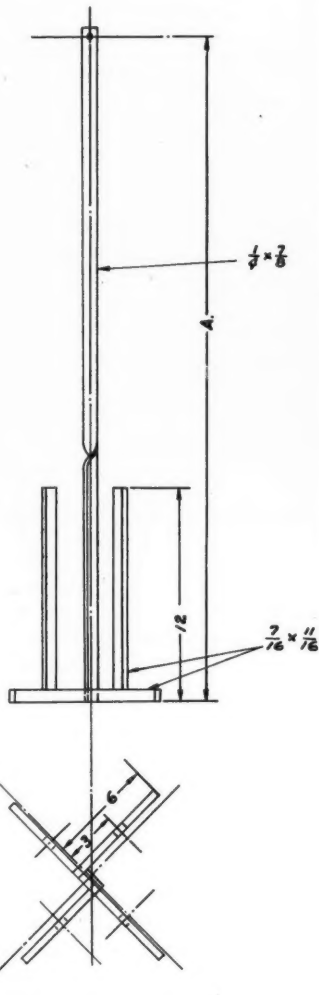
The conveyor now delivers the tubing to the next working area, in which three operations are performed. The housing sections are removed, split, heated and pressed. The tubes advance from the splitting machine through a 20-foot-long conveyORIZED furnace, then to the forming press. The conveyor circles this entire area, and the formed housing sections are then returned to the carrier hooks for further movement (to another pickling operation).

At this point the tubing is too hot for immediate pickling, and now a section of the line serves for

Flow diagram of conveyor lines No. 2 and No. 3, also end point of No. 1 line, lower left-hand corner.



cooling purposes. The conveyor ascends to a 15-foot height where it snakes back and forth for a distance of about 50 feet before entering the pickling department. This operation is performed in a manner



Conveyor hooks are 52" long on lines one and two, and 46" long on line three.

similar to the one previously described—that is, without requiring the attention of operators.

Note that the conveyor system also paces the operators, who are responsible for removing the arriving tubing. Unlike formerly, there is no waiting for material anywhere along the line. By the same token, the disposal of the processed pieces is simple and orderly. All the operator has to do is to rest them on the hooks of the line traveling by.

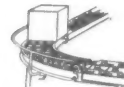
The end point of No. 3 line is reached at the trimming station
(Turn to page 64)

3 WAYS... to CONVEYORIZE and CAPITALIZE

Careful planning by Rapids-Standard Engineers to make full use of the right combination of material handling equipment best suited to your own particular application will pay off in DEcreased costs and INcreased production. A conveyor system consisting of Rapid-Wheel Gravity Conveyors, Stevedore, Jr. Power Belt Conveyors and a Floor-Veyor was recommended by these engineers as a means of solving a complex handling problem at the McMahan & Leib Co., Anderson, Indiana. This system carries packaged goods from the loading dock to any part of a second story warehouse without man-handling . . . eliminating all overtime and demurrage costs. Call on these handling experts and you, too, can capitalize three ways on the three conveyors shown below:

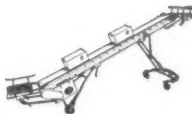
1 RAPID-WHEEL* CONVEYOR

Carries your packaged material by the free force of gravity. It fits readily in narrow aisles and crowded warehouses. Quickly adjustable, and easily portable. Standard lengths 5' and 10'.



2 STEVEDORE, JR.*

A portable Power Belt Conveyor that is easily rolled to the job to save hours of man-handling in loading, unloading, stacking and elevating operations. Quickly adjustable . . . from 18" level to delivery height of 72".



3 FLOOR-VEYOR*

Permanently installed to provide a convenient method of moving cartons, cases, bags and boxes from one floor to another. It is the only unit of its type manufactured complete, ready for easy installation.



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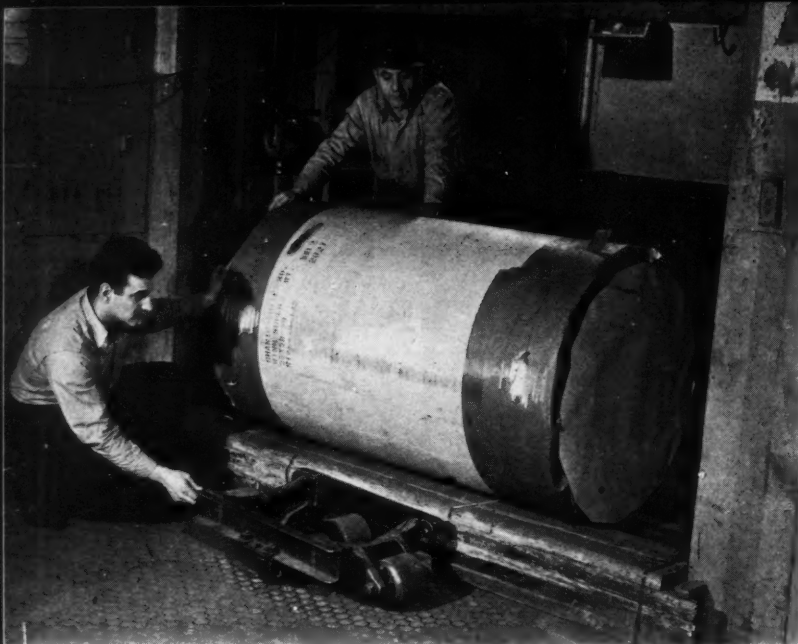
We'll answer promptly any request for details—even a postal card.



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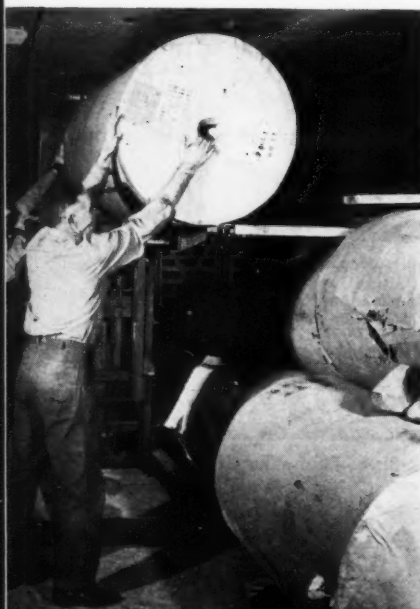


Paper dolly receives roll from elevator via narrow platform which clears recessed doorway.

Handling Mechanics at Popular Mechanics

Popular Mechanics Magazine has no difficulty in handling its extra-heavy postwar volume by use of standard equipment—in space that was designed for only half the present tonnage.

**TIERING MACHINES
AND DOLLIES**



THE congestion resulting from the present peak volume in printing plants brings up pressing questions about modern material handling aids. Today's greater tonnage demands efficient handling practices and the use of every available cubic foot of space for storage purposes. In many instances the effective application of such standard equipment as paper dollies and tiering machines is enabling smaller printers to cope with the bigger loads.

The present report on *Popular*

Extension pieces attached to tiering machine platform bridge gap to third layer of paper.

Mechanics Magazine, Chicago, located in a multi-story building, is an example of a printing plant in the not-so-large category which is today handling just about double the volume (1,000,000 copies per month) in a plant originally designed for only 500,000. While some changes in existing handling and routing facilities are planned for the future, the present operation illustrates effective use of standard equipment in moving a 100 per cent greater volume. The tonnage, in and out, amounts to between 900,000 and 1,000,000 pounds per month.

Handling Devices Coordinated With Elevator

The paper is in roll form, and the individual rolls weigh from 800 to 1,700 pounds. The material is received at the company's covered truck dock, where it is rolled from the vehicles across the 12-foot-deep platform directly into a 5,000-pound capacity elevator for movement to the basement storage area.

To facilitate the removal of the rolls from the elevator on the basement level, the following arrangement is used. An eight-inch-high platform, about 10 inches wide, is placed in the recessed frame of the elevator door, and alongside the narrow platform or skid a four-wheel dolly is positioned. The elevator is stopped at the height of the platform, and the paper is rolled over it onto the waiting dolly.

Why the portable platform between elevator and dolly? The platform or skid clears the recessed door frame, thus making it possible to move the loaded dolly straight ahead and avoiding the necessity of making a sharp right-hand turn with each heavy roll. This trick not only avoids undue muscular effort on the part of the operators but also appreciably expedites the transfer of the paper.

The paper is moved on the dollies to the near-by stockpiles where the rolls are piled three high by use of an electric tiering machine. For

building the first layer, the rolls are "tipped" off the dollies onto the planking. This handling is made possible by use of the special dollies and a paddle. The dollies are balanced on two center wheels and have one wheel at each end. The paddle is inserted under one corner and, when upward pressure is exerted, the center-balanced carrier is easily tilted to one side. The paper thus rolls off in the desired position, as shown in one of the photos.

The second and third layers are of course built with the tiering machine, which enables the company to make full use of cubic space in the area, which has a 10-foot overhead. The rolls are stored horizontally on the floor. While dunnage is usually placed between layers, rolls of extra-large diameter may be nested in order to utilize vertical space in areas where piping is attached to the ceiling.

In building one of the upper layers, there may be a gap of a foot or two between the platform of the tiering machine and the last roll on the aisle. This gap is bridged by means of skid boards or extension pieces which are hooked into slots at the sides of the platform. The rolls are in this manner readily transferred to the stockpile. The tiering machine is of 2,000-pound capacity, with a 5' 9" lift, and the platform dimensions are 37" x 48".

When the material is needed for the presses, the operation is performed in reverse order by use of the tiering machine-and-dolly combination. The eight-inch height of the dolly is of course on the same level with the machine's platform when in lowered position. In moving by elevator to the pressroom on the first floor, the rolls remain on the dollies. At the point of use, the paper is again removed from these carriers by means of the paddle.

Skid Movement, Orderly Layout, Changes Planned

The signatures at the delivery ends of the presses are placed on the customary wooden skid platforms (42" x 53"), which are spotted on detachable metal legs. These loads of 20,000 16-page signatures are moved by hydraulic hand lift truck, via elevator, for transfer to the bindery on the second floor.

BAKER TRUCK *triples storage space* CUTS HANDLING TIME AND LABOR COSTS



1. Stock arrives in box cars, in 30" and 50" rolls, and varying lengths and widths. 36" rolls weigh from 300 to 1000 lbs.; 50" rolls weigh 1000 to 3000 lbs. Illustration shows Baker Truck placing bridge plate in position prior to unloading.



2. The same truck unloads 50" rolls directly from incoming cars and transports them to storage. Rolls are usually stowed in cars two wide and two high.

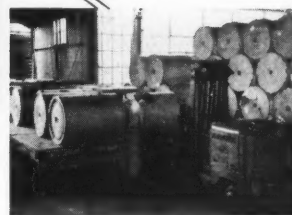
A single Baker Electric Fork Truck mechanizes movement of large rolls of paper used in process of making corrugated board—from box car to corrugating machines. The truck has been giving continuous, satisfactory service for 7 years. Illustrations and captions describe, step-by-step, the flow pattern in this modern paper conversion plant. They may suggest answers to similar problems in other plants.



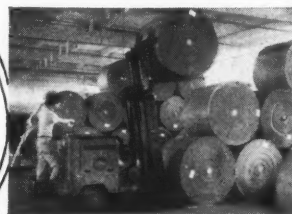
6. Rolls needed for production are transferred from Baker truck onto steel dollies with concave decks matching contour of rolls. Dollies run on narrow-gauge tracks extending to the roll stands.

For the FORT NIAGARA
CORRUGATED BOX DIVISION
of the
ROBERT GAIR COMPANY
North Tonawanda, N. Y.

*No Man-Handling
from box car to
production!*



3. 36" rolls arrive in separate cars, and are unloaded onto a platform with incline leading into plant, where they are removed by the Baker Truck and taken to storage.



4. Baker Truck tiers rolls horizontally to ceiling height, 50" rolls three high and 36" rolls four high. Thus the truck more than triples the value of storeroom floor space. Bottom rolls are placed on 2" boards to permit entrance of forks.



5. Detiering of rolls is accomplished by positioning truck with fork backs against bottom roll, removing wedge block, and releasing brake which allows two top rolls to lower into position. Before taking roll away, new bottom roll is wedged.

Let the Baker Material Handling Engineer show you how an integrated material flow system can make similar savings in your plant.

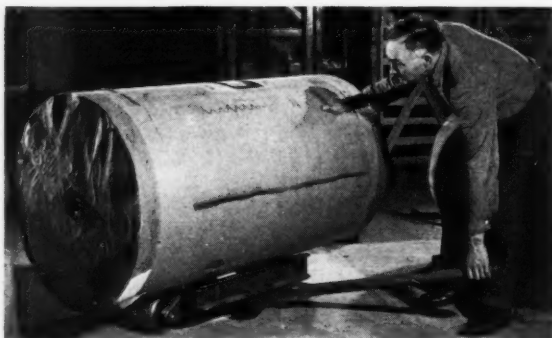
BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Raulang Company
2185 WEST 25TH STREET • CLEVELAND, OHIO
In Canada: Railway and Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

From the trimming machine, the copies of *Popular Mechanics* are delivered on a canvas belt about

stacks by use of mechanical tying machines. The tied bundles are stacked on skids, and the completed

future improvements, indicated earlier, are not complete in every detail, their primary objective will



Illustrating use of the paddle in tipping the roll of paper from the center-balanced dolly.



Trimmed copies from conveyor belt (background) advance to wrapping, to tying, thence to skid.

20 feet long. One of the accompanying photos shows the simple and orderly layout of this department. Two operators are stationed alongside this belt line, each one removing alternate stacks. The five-magazine units are placed by the operators on the wrapping table which is parallel to the belt conveyor. The copies are arranged in stacks of 25 each. On the opposite side of this table are two wrapping operators who bundle the

loads are then moved by hydraulic hand lift truck to the elevator for delivery to the first-floor receiving-shipping dock. Incidentally, practically all moves involved in handling raw, in-process and finished materials are between 50 and a maximum of 75 feet.

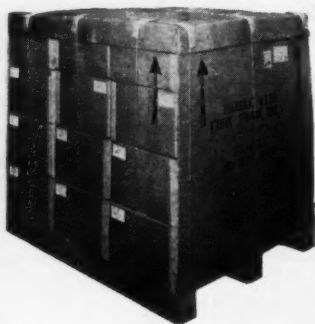
The multi-story building, situated in a high land value area in Chicago's near North Side, is necessarily dependent to a large extent on elevators. While the plans for

be labor-saving devices. Following a relatively simple building change, for example, a new installation may move the incoming rolls of paper directly from the receiving platform to the basement storage area. The method of feeding rolls to the presses from the basement area may also be revised.

Meantime, *Popular Mechanics* is doing a markedly efficient job of handling a 100 per cent greater load in a compact layout.

GERRARD REINFORCEMENT

"Delivers The Goods"



(Left) Corrugated-board pallet loaded with cartons of electrical relays. Three stacks of individual cartons held by Gerrard Round Steel Strapping with three additional straps binding load to pallet.



(Right) Corrugated-board shipping pallets strapped with Gerrard Galvanized Round Steel Strapping tractor-loaded on truck.

THE GERRARD METHOD OF ROUND STEEL STRAPPING—with a non-corrosive finish—reinforces from Parcel Post to Pallets, and all types of cartons, boxes, crates bundles in between. The smooth galvanized Gerrard strapping makes its own tie, necessitating no other fastenings to hold the package rigid. Its ability to withstand transportation shocks is due to its ductility and its high tensile strength.

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GERRARD STEEL STRAPPING COMPANY

2939 West 47th St.

Chicago, Illinois

A METHOD OF MOTOR LUBRICATION

By E. N. FABRIZIO

Manager
Renewal Parts Application & Order Service
Westinghouse Electric Corporation
East Pittsburgh, Pa.

MOTOR lubrication problems have been greatly simplified with the introduction of the pre-lubricated bearing. In the factory, these bearings are sealed in a cartridge along with the proper amount of the correct type of lubricant. Inspection periods were first set at three years, have now been lengthened to five. What this means in savings in manpower is obvious.

Since 1939 thousands of motors with these pre-lubricated bearings have been installed and have operated continually, 24 hours a day, at higher humidity and room temperature than is usually encountered in industrial applications. Inspections of motors chosen at random among approximately 600 installed in six different manufacturing establishments, in which all of the motors had operated at least four years, 24 hours a day, disclosed that none of the motors with pre-sealed bearings had been greased. Nor did the lubricant need to be renewed even then. The mo-

tors were put back into operation about three years ago with the original lubricant and what its ultimate life will be cannot be determined until subsequent examinations provide additional data. As this information is secured, there is good reason to believe that the inspection interval may be made even longer than the present five years.

The chief advantages of the pre-sealed bearing, aside from the sharp reduction in maintenance costs are: (1) the tightly sealed enclosure reduces oxidation of the grease, promoting longer grease life; (2) grease is kept in and dirt is kept out; (3) proper kind and amount of lubricant promotes longer bearing life; (4) when motors are disassembled the bearings are enclosed in a cartridge which protects them from dirt.

Wherever bearings turn, some need for maintenance is recognized. After motors with presealed bearings have been in operation for five years, it is recommended that a spot check be made. If the lubricant is discolored and has an offensive odor, it should be replaced. If not, the shield of the presealed bearing may be replaced and the bearing put back in service.

When ever it is necessary to relubricate a presealed bearing, the operation should be preformed according to the procedure illustrated here. These photos were taken during an actual relubricating operation.

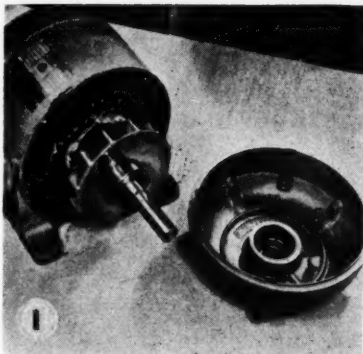


Fig. 1. Remove the bracket from the end of the frame.

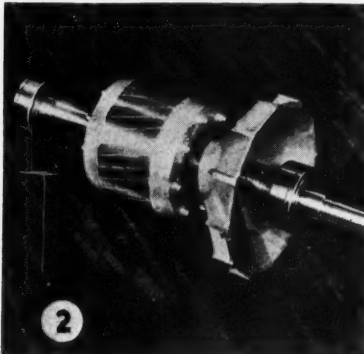


Fig. 2. Withdraw rotor from stator.



Fig. 3. Place rotor on end and insert screw driver under tapered end of split spring ring and snap it out of retaining slot.

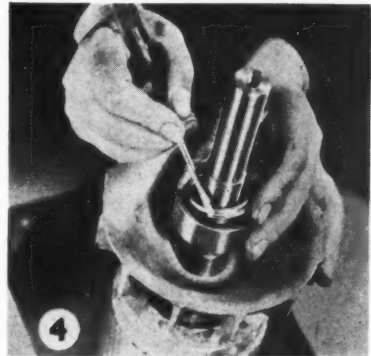


Fig. 4. The bearing seal is now exposed. Place end of screw driver or knife under the projection provided on the seal and raise it sufficiently, so that it may be grasped by the thumb and index finger and removed.

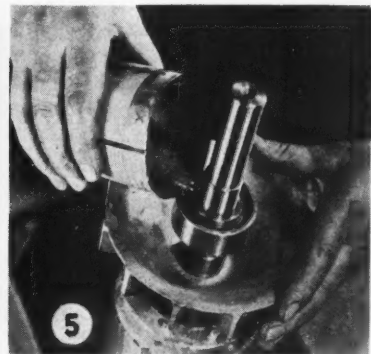
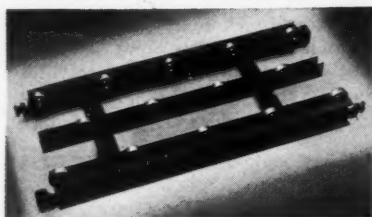


Fig. 5. Pour suitable solvent into the bearing and leave it for a few minutes to dissolve grease.

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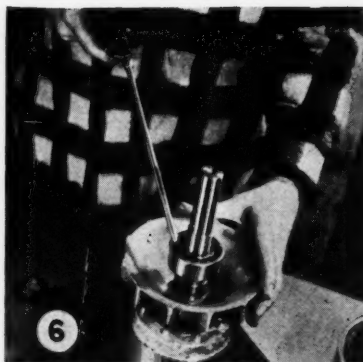


Fig. 6. Be sure to blow out all grease and solvent with air. Be sure all old grease is removed.

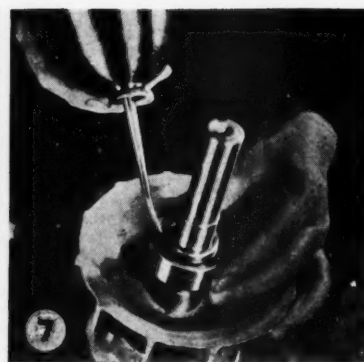


Fig. 7. Add a few drops of good grade engine oil and spin bearing.

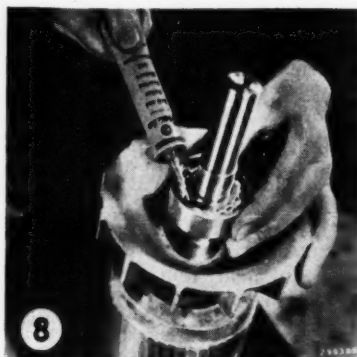


Fig. 8. Add ball bearing grease as shown in the chart appearing immediately below:



Fig. 9. Replace seal and snap retainer ring in place and reassemble motor.

Shaft Extension Diameter	Vol. of Grease to be added
$\frac{3}{4}$ to $1\frac{1}{4}$ ".....	1 cu. in.
Above $1\frac{1}{4}$ to $1\frac{7}{8}$ ".....	$1\frac{1}{4}$ cu. in.
Above $1\frac{7}{8}$ to $2\frac{3}{8}$ ".....	$2\frac{1}{2}$ cu. in.
Above $2\frac{3}{8}$ to 3".....	4 cu. in.
Above 3" to 4".....	7 cu. in.
Above 4" to 5".....	10 cu. in.

\$1,500 in Cash Awards

This prize money will be awarded for winning papers in the FLOW contest on material handling costing. You may have before-and-after figures suitable for a winning paper. See the announcement on page three, then send for your entry blank.

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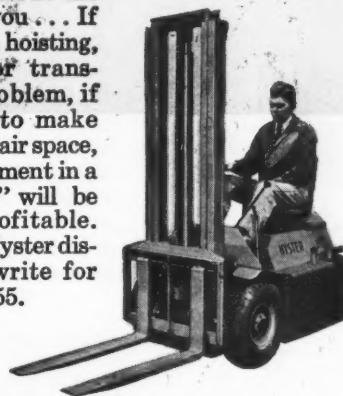
The 2000-lb. capacity Hyster "20" is made to order for narrow aisles in warehouses, factories, parts departments, box cars, in any close quarters. Only 36" wide with rounded rear end it can turn in tight spots and crowded spaces.

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Conventional controls — two speeds forward and two speeds reverse—make the "20" as easy to operate as a passenger car.

Hydraulic lift hoists 2000 lbs. 9 feet. Other lifts from 6' to 12' are available, as are special lift truck tools for out-of-ordinary jobs.

The Hyster "20" is saving time — labor — money in every type of industry. It can do the same for you... If you have a hoisting, stacking or transporting problem, if you want to make use of "free" air space, your investment in a Hyster "20" will be highly profitable. Call your Hyster distributor; write for Catalog 1055.



HYSTER

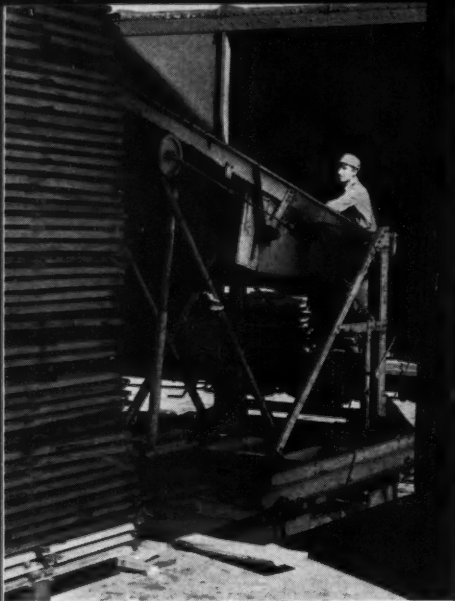
Narrow aisles are no obstacle to the Hyster "20". The compact unit, only 36" wide, is a money-saver in crowded factories, warehouses; loading and unloading box cars. Hyster makes seven models—from the 2000-lb. capacity "20" to the 30,000-lb. capacity MH Straddle Truck. Write for catalogs.

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Incoming boards travel from freight car to kiln truck via conveyor boom of car unloader.



From jointer, stock moves to rip saws in sizable skid loads. Note slat conveyor at jointer.



Several caster-supported turntables like this feed matched bed stock to glue press operators.



This furniture factory uses

11 Methods in

Car unloaders . . . all-track lumber yard . . . leveling platforms . . . powered and gravity rollers . . . turntables . . . castered trucks and hydraulic hand lift trucks . . . belt conveyor . . . hoist handling . . . and hundreds of feet of slat conveyor lines in the assembly and finishing departments.

THE Mersman Brothers Corporation, Celina, Ohio, specializes in the manufacture of occasional furniture which consists exclusively of living room tables. Over a period of several years the company has reduced the original number of 500 table models to about 40 on which it has standardized at present. The move was made in order to take advantage of the economies of mass production, and this inevitably also means the economies of mass-handling by means of modern material handling methods. At any one time there may be as many as 75,000 tables in various stages of manufacture flowing through the plant, and the quantity of any one pattern being produced may vary from 3,000 to 15,000 units.

Lumber Yard on Wheels

Effective integration of modern handling methods is a feature of

the over-all operation—starting with the incoming raw material and carrying through to final inspection and packing of the finished product. The handling devices include an all-track lumber yard, dollies, hoists, hundreds of feet of conveyor lines, as well as a variety of castered equipment used for piece parts on short hauls.

The all-track lumber yard, means, of course, that the entire outside storage operation is on wheels. The incoming freight cars of lumber are spotted alongside one of two sheds which house track-mounted car unloaders. The boards from the cars are placed on the 12-foot conveyORIZED boom of the unloader, which is hinged at one end, permitting the opposite end to be adjusted vertically to the height of the stack being built.

As the boards are taken off at the discharge end they are stacked on kiln dollies. Each dolly consists of two flanged wheels mounted be-

Pressed stack of veneered cores to storage. The hoist makes this easy, one-man operation.

A large volume of small underparts is loaded on floortrucks by use of retainer racks.



One Handling System

tween two 6-foot lengths of 4-inch channels. Three of these dollies are lined up in parallel on the triple track, and they constitute a "truck." The stuck lumber is thus built to a height of nine feet (with the boards averaging between 12 and 16 feet in length). The individual loads comprise from 2,500 to 3,500 board feet, and these remain intact through yard storage, the dry kiln, the acclimating room, and thus also move into the mill.


Usually one man feeds the unloader conveyor, while two men stack the lumber on the trucks, and a fourth one lays the sticks. From the unloading sheds the loads are pushed to the storage tracks in the yard. These cover approximately two acres and are laid out in a south and north direction. The yard is divided into four approximately equal parts by two main lines, one running east and west and one running north and south. The storage tracks are laid on concrete posts at an elevation of about one foot above the ground and are thus on the same level as the tracks on the transfer cars operating on the two main lines. By use of these transfer cars a load in any storage section can be readily moved to any other section. Usually the "loads on wheels" are so spotted that they advance in a straight line north to the dry kilns.

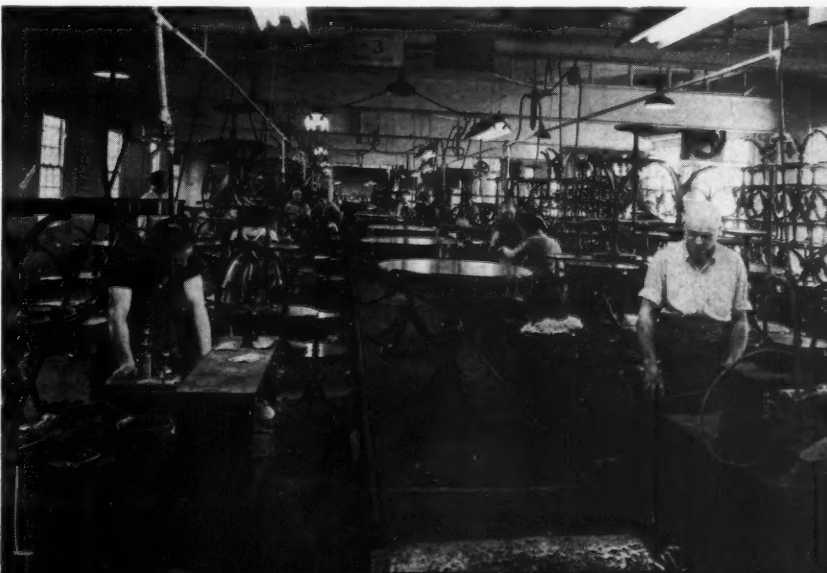
The kiln tracks are at an elevation of about seven feet above the yard level. At this point the loads are raised by an electric lifting device whose carrying surface is an independent section of track. On the higher level the load is deposited on a transfer car which is


lined up with any of the several tracks leading into the kilns.

Upon completion of the drying process, the loads again advance north to the acclimating sheds, approximately 75 by 125 feet. Similar to the arrangement of the trackage in the yard, the area here is like-



Conveyor, left, delivers tables to finishing; they then travel over seven parallel lines. 



After final finishing operations this slat conveyor delivers tables to packing at far end. 

small units is loaded
use of reeling racks.

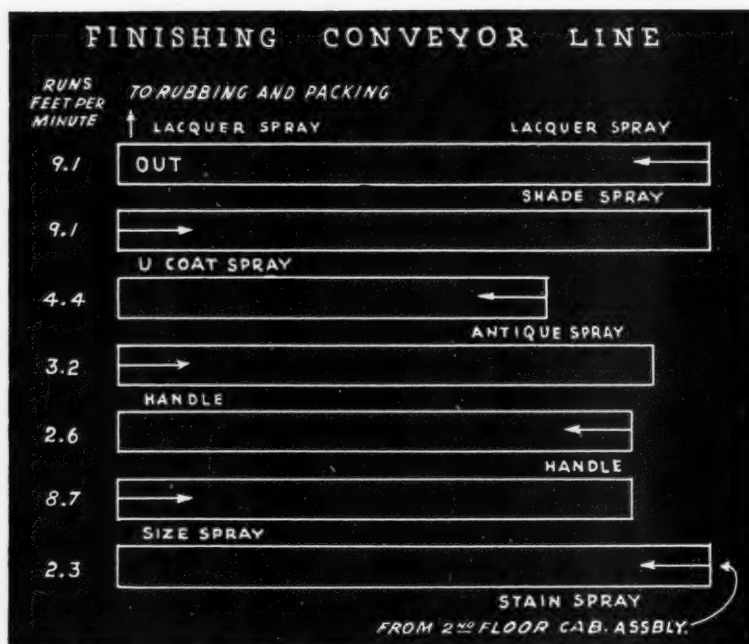


wise laid out in a series of storage tracks fed by a transverse main line. The tracks are numbered for stock identification and inventory purposes.

From the acclimating shed the loads move north once more to the cut-off saws in the adjoining mill, a distance of about 125 feet. Thus, no individual board is rehandled once it has been unloaded from the freight car and stacked on the kiln truck. During the various moves—yard storage, dry kiln, acclimating room, and transfer to the mill—the loads of 2,500 to 3,500 board feet remain undisturbed as load units. (The management is considering various means of propelling the trucks by suitable power units instead of by the present manual method.)

Conveyors, Castered Equipment

In the mill, the top boards of the 9-foot-high loads would not be conveniently accessible to the cut-off saw operators, and hence the trucks are run on a leveling platform which is lowered to convenient working height. The loads are then



Layout of seven conveyor lines used in the finishing department.

gradually elevated by electric control as the stacks are used up.

From the three cut-off saws the pieces (of different lengths) are

moved away by powered rollers, then travel over inclined gravity rollers to the rough planer. In this area the work stations are closely



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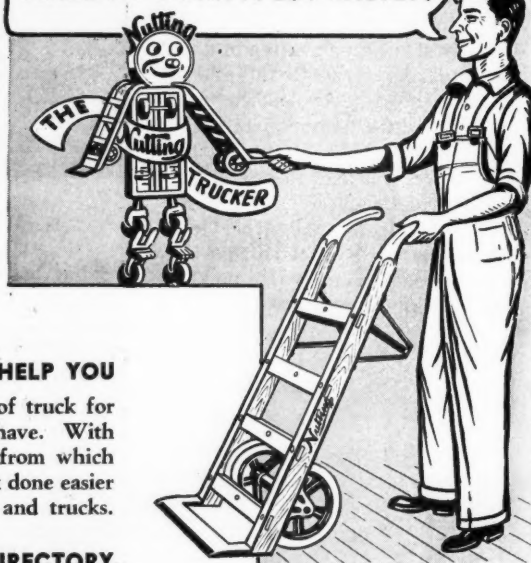
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spaced, and the material is delivered either by short conveyor sections or the processing equipment to the next operation in line.

Incidentally, while the subsequent part of the description will cover chiefly the table tops, the principal components, highlights of the handling of small-piece parts will be indicated later. (A table may consist of from 12 to 18 different components.) When delivered from the self-feed jointer, the pieces are from 19 to 35 inches long, and they are here assorted according to lengths on 25" x 48" wooden skids. By use of hydraulic hand lift trucks the loads are moved across an aisle to the rip saws. The pieces, now matched into sheets of proper size, are then disposed of by the operators on one of four revolving tables. (A "sheet" is the core or table top, which will later receive a covering of veneer.)

The scrap cut out by the rip saws is thrown on an 8" overhead belt travelling in a trough. About 75 feet long, this conveyor carries the edging and defective parts to the "junk" saw for salvage. The use of this overhead line prevents the cluttering of confined work areas and provides a continuous disposal method for scrap.

The employment of the turntables is likewise noteworthy as an effective method for feeding the rough sheets or cores (also called beds) to the gluing machines, the next operation in line. Each of these tables is about 12 feet in diameter and is mounted in the center on a ball-bearing base from which a supporting shaft extends to the ceiling. For extra safety, the outer arc of the turntable is supported underneath by swivel casters spaced about 36 inches apart.

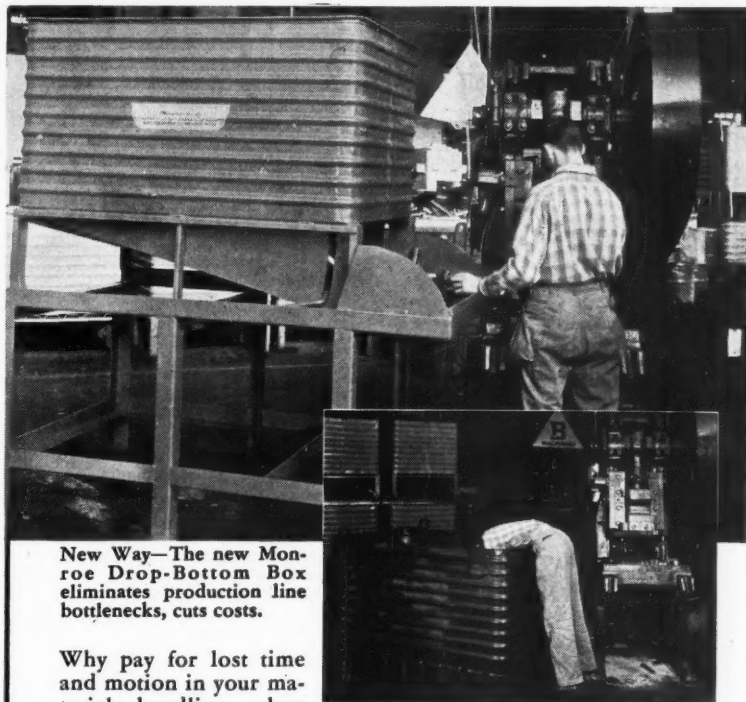
Thus, the tables are constantly being loaded on one side, and unloaded at the opposite side by the gluing machine operators. A short turn of the revolving surface is sufficient to bring the next stack within reach.

The glued sheets are loaded on skids and moved by hand lift trucks to the drying kiln, whence they are returned for further processing to a department immediately adjacent to this area. Here the cores are placed on 1-2-1 hand trucks (24" x 48") and thus transported by elevator to the second floor for

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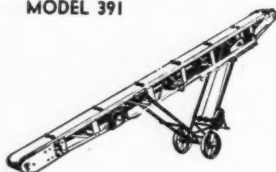
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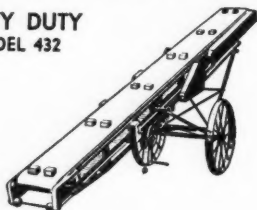
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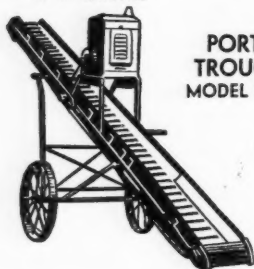


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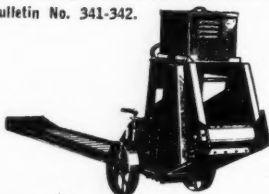


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veneering and/or plying.

The veneered stacks of cores are moved on a flanged-wheel transfer car to a hydraulic press, where the material is put under pressure while held in clamps. The pressed and clamped loads are removed from the press on a short length of conveyor track, and from here they are picked up by a chain hoist suspended from an overhead mono-rail track.

Tongue switches connect the main overhead line to seven parallel branch lines, each about 100 feet long. The loads are thus transferred quickly and without effort to the storage point, where the stacks are deposited in even rows. While the individual loads weigh up to 500 pounds, hoist handling makes their transfer and storage a simple, orderly one-man operation.

After removal from the clamps, the veneered cores are stuck (separated by sticks) as they are placed on 4-wheel hand trucks for movement to the nearby dry kiln. The material now remains on these trucks through a series of finishing operations. The stations are closely spaced and laid out on the second-floor area in a straight line so that the work flows smoothly to the final assembly point.

After leaving the dry kiln, the beds or cores thus advance through edging, sanding, shaping, glue sizing, and then to finish sizing. The operators usually work from one 4-wheel flat truck to the other. High stacks of numerous pieces can be built on each load carrier, thus providing an orderly flow over short distances. After finish sanding, the material has arrived at the far end of the room where it is pushed across an aisle to the assembly line.

Smaller Piece Parts Flow

Meantime the underparts or smaller components are machined in the mill on the floor below and travel in the same general (easterly) direction toward the final milling operation. While there are exceptions depending on the type of table and the specific job requirements, this movement holds true for the mass of solid underparts. From final machining, pieces are sent by elevator to the second-floor cabinet or assembly, where they meet up with the table tops.

The smaller components are likewise handled in quantity by use of the 1-2-1 flat trucks. Since these pieces are of irregular shapes and sometimes no more than three or four inches long and an inch in diameter, this would mean quite a stacking problem. This is neatly solved by use of retaining frames or nesting sections. Legs and turnings, for example are placed within these frames laid over the truck bed. The frames have two pieces of strap iron bolted at each end, which clamp over the rack below and above. The loads of small parts are thus built nine racks or layers high, which are approximately 56 inches above the bed of the truck.

Conveyorized Assembly, Finishing

The loads of underparts and cores or beds are spotted in the east end of the second-floor cabinet room. A slat conveyor runs the length of the wall, and parallel to it are the assembly benches. Each operator has the required components within reach and finishes his own table. Upon its completion, he disposes of it on the slat conveyor. This line travels at the rate of six feet a minute, permitting various inspection and touchup operations to be performed along its path of travel. The slats are approximately two inches wide and 36 inches long, and the line is driven by a single chain in the center (Conveyors mentioned subsequently have two-chain drives). Just beyond the end point of this 75-foot conveyor, another section inclines to the third floor. This delivers the tables to the finishing department. Incidentally, tables assembled on another line in the second-floor area are also transferred to the inclined conveyor. The latter has retaining strips nailed across the slats to prevent the tables from sliding down.

On the third-floor level, the arriving tables are handled in either of two ways. They are either transferred directly to the nearby finishing conveyor line, or they are placed on castered platforms (48" x 72") for temporary storage. Here's the reason: the aim is to load the finishing line with tables of the same style and size. When operators handle pieces of uniform design, weight and shape, it is well known they develop a rhythm that

(Turn to page 65)

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CLARK'S cost-cutting benefits

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A St. Cloud, Minnesota contractor cuts handling costs to a minimum with CLARK "Trucloader".



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1,000 lb. Gas "Trucloader"



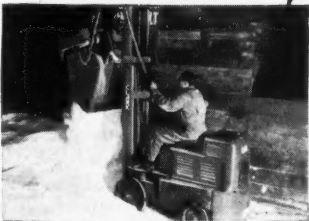
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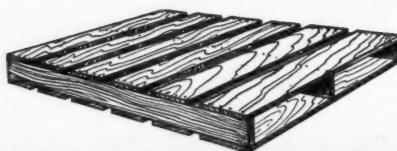
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ON THE



PALLET

NEWS · VIEWS · TRENDS

THE Publishers of FLOW Magazine have announced, for late fall delivery, the first Directory of material handling machinery, equipment and accessories. The plan calls for a bound volume in which the newly developed engineering data, technical material, and manufacturer's literature in this field will be combined for convenience and reference.

IN CONNECTION with the Directory of material handling equipment, the publishers of FLOW announce the appointment of Harry W. Carpenter, formerly material handling engineer at the International Harvester Company, Tractor Works Division. His duties will include review of the engineering and technical data to be presented in this much-needed volume.



As material handling engineer for Harvester, Carpenter was chairman of the Material Handling Committee of the Industrial Power Division for the Tractor Works, the Melrose Park Works, and the Milwaukee Works of International Harvester. He served as committee member of other Harvester material handling groups, and has addressed numerous technical societies on the subject.

THE annual report of Hewitt-Robins Inc. for the year ending December 31, 1946, shows sales of \$15,426,415 and net earnings of \$471,452, equal to \$1.70 per share. The Robins Conveyors Division started 1946 with a large backlog and excellent prospects. President T. Robins, Jr., stated the over-all business of the belt conveyor industry is running at approximately three times prewar levels, with heavy backlogs continuing in spite of a high rate of production.

THE Albert H. Cayne Company, Factory Representatives, recently acquired exclusive distributorship for the material handling field in its area of the American Engineering Company's line of Lo-Head Electric Hoists, the Harrington "Peerless" line of Manually-Operated Chain Hoists, as well as the All Steel Conveyor manufactured by the Steel-Parts Mfg. Co., Chicago.

These are in addition to the company's regularly distributed lines, such as "Weld-Bilt" products manufactured by West Bend Equipment Corp., West Bend, Wisconsin; Speedline products manufactured by Speedline Equipment Mfg. Corp., New York City; Faultless Casters manufactured by Faultless Caster Corp., Evansville, Indiana, and others.

IN GENERAL, the greater the volume of materials handled, the greater the savings in using the pallet load unit. But there are savings for smaller companies, too.

Assuming that you handle at least enough material to make pallet loads, investment in a fork truck and pallets may be justified if: (a) your largest operating expense is merchandise handling; (b) an undue proportion of your goods is damaged on arrival at the customer's plant; (c) your present method of handling materials is unduly slow and prevents you from taking on as much business as your manufacturing capacity would allow; (d) costs of freight car loading and unloading are very high.

Some shippers have been able to offset part of the initial cost of the fork truck by using the truck for other purposes. It's possible, for example, to replace the fork with a goose neck crane attachment, suitable for handling bar steel, pipe, glass, etc. The forks can also be used for handling crated refrigerators, stoves and other large home appliances. As a moveable elevator, it can be used for improved stacking of many hard-to-handle items. With live skids and pallets, it may expedite the collection of loads for delivery to retailers.—*Research Institute of America.*

THE Board of Directors of the Material Handling Institute, Inc., held their second meeting this year at the Cleveland Hotel, Cleveland, Ohio, on Monday, April 14, 1947. Members, not on the Board of Directors, were invited to sit in at this meeting. Suggestions were solicited from members regarding subjects to be placed on the agenda for attention of the Directors.

U. S. STEEL produced 21.3 million tons of ingots and castings in 1946. This was 5.2 million tons less than its steel production of the previous year. The steel and coal strikes in 1946 resulted in an estimated production loss to U. S. Steel of 6.3 million tons of steel. U. S. Steel's current annual capacity of ingots and castings is three million tons less than the high point in tonnage in 1944—and represents 32.4 per cent of the total steel making capacity of the country.

PITTSBURGH Consolidation Coal Company has announced plans for a research and development program which it is believed will lead to the creation of a new multi-million dollar fuel industry. The aim of this program is to perfect commercial processes for making gasoline and a gas fuel of high heat value from bituminous coal.

(Continued on page 67)

Saves 750 lbs. dunnage per car

Water heater company cuts freight costs, reduces damage claims, saves time and labor with Acme Steelstrap

The extra expense of material and labor for bracing a car with heavy, costly lumber is a cost of distribution which can be reduced. Also, that hidden cost, "claims for damages," can be eliminated.

The Fowler Manufacturing Co. of Oregon asked Acme shipping specialists if Acme Unit-Load Band might be an answer to their water heater shipping problems. It was. This method saves 750 lbs. of lumber dunnage per carload and has proved to be a safer method of bracing cars.

While there, the Acme experts also suggested an improved design for individual heater packages. This resulted in another 25% savings.

You are welcome to call in an Acme shipping specialist to consult with your organization on any shipping problem without obligation.

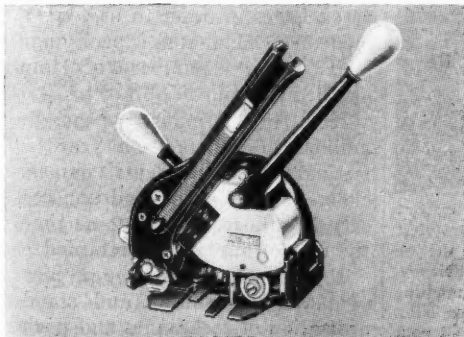
Write or send for booklet containing actual case histories of substantial savings made by Acme shipping specialists.



Acme Unit-Load Band practically eliminated freight damage claims, reduced labor costs, and saved 750 lbs. of lumber dunnage per carload.



A shipping room production line is building more efficient packages with Acme Steelstrap. This saves 25% on each water heater package.



More savings ahead for Acme Steelstrap users—No. 3 Steelstrapper, the lightest tool made, is now available. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for better balance and easier handling.

ACME STEEL COMPANY

NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11

MAY, 1947

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Chicago 8, Illinois

Gentlemen:

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Company

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City..... State.....



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CHICAGO

Need A Railroad In Your Plant?

When you install a Shepard Niles monorail hoist you have your own private railroad to lift heavy loads, move them to other parts of the plant and deposit them where needed.

America's oldest builder of electric hoists and cranes has a style and size of monorail hoist for every handling operation from $\frac{1}{8}$ to 20 tons. Trained, experienced Shepard Niles engineers will gladly survey your material handling problems and recommend, without obligation, the best style of monorail hoist to do the job. With over 5,000 styles and sizes from which to choose, there's bound to be one to suit you.

Shepard Niles monorail hoists, whether floor or cab operated, work economically and efficiently, year after year. When a Shepard Niles does the work there's no tired muscles, no absenteeism.



For indoor or outdoor handling of the heaviest loads, Shepard Niles electric cranes do the job with ease, safety, economy and efficiency. There's a style and size for every handling need. Let trained, experienced Shepard Niles engineers help you select the best crane for your heavy handling.

Shepard Niles

CRANE & HOIST CORPORATION

466 SCHUYLER AVE., MONTAUR FALLS, N. Y.

THE DOLLARS AND SENSE OF HANDLING

By EARL I. BURKE

Manager of Shipping
Republic Steel Corporation, Cleveland, O.
Chairman, Committee on Packaging, Market-
ing and Loading, American Iron and Steel
Institute

I SHALL deal with the handling of finished products and its relation to what might be called internal freight, a hidden cost of which very few companies and very few individuals are aware. The old method of material handling was manual, and yet today in many factories and plants it still is the practice to use man-powered equipment. It is difficult to recognize the enormous expense with which they are handicapping themselves for the lack of proper standardization, proper planning, adequate handling equipment and accounting methods designed to segregate those costs.

Industry is aware of the fact that from ten per cent to forty per cent of manufacturing costs are composed of handling costs. Labor costs are continuing to rise and for that reason alone more attention must be paid to handling methods in the plant. All too often management views material handling, warehousing and shipping as non-productive services and considers the purchase of mechanized handling equipment as beyond reach.

An effective handling system need not be costly nor elaborate and any business can afford capital investment which reduces operating cost. An effective system involves the proper weight of lifts or packages in order to use equipment to its maximum capacity and increase the number of tons handled per hour.

It is costing industry generally millions of dollars each year for manual labor, accidents, damage claims, wasted space, and unnecessary handlings. At the same time, the flow of materials is retarded.

It seems to me that the problem of material handling and standardization of techniques and packages has been treated too lightly. The handling of incoming materials, goods-in-process and shipping practices should all have serious consideration by top executives.

Any change in material handling methods of equipment is hardly an improvement unless it pays off in

cutting costs one way or another. Present handling practices and equipment should be carefully examined and compared with available equipment. Maximum lift efficiency should be studied as well as the flow of materials through the plant. Material handling methods should always equal or exceed the processing or fabricating flow—and that includes packaging, marking and loading in order to make possible faster deliveries.

Under existing conditions no industry can afford to permit any single element in its manufacturing processes to remain as inefficient as many of the present day's material handling methods are.

Sometimes a receiver of material writes specifications for shipping without consulting his source of supply, and trouble follows. In one typical case cold rolled strip in coils was being shipped in box cars, loaded cylinder method, at a cost of approximately \$.45 per ton, or \$26.05 per car. The receiver unloaded the material with a ram truck.

Suddenly the receiver decided that there was an opportunity to save \$0.25 to \$0.30 a ton if he could have the material shipped in an open top car, in special weights, mounted on platforms. That specification meant re-assembling the material, furnishing platforms, banding coils on platforms, weather protection and loading the lifts into an open top car. The receiver proposed to unload this material with an overhead one ton-capacity crane.

For the producer to prepare material as proposed involved an additional cost of \$3.08 a ton or \$169.71 per car and this tonnage amounted to more than 500 tons per month.

By getting experienced material handling men on the job, both methods were analyzed and the receiver quickly withdrew his request when presented with the facts. There should be more of that type of cooperation.

Those are just a few of the many examples of what is going on daily between steel producers, warehouse people and manufacturing plants. It is evident that there is much work to be done for the benefit of industry as a whole by material handling men. There is also

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3. BY SERVICE? In that case these tires are your *best bet*. Your local U. S. Distributor is right on the spot—with full facilities for skilled, prompt service. Better call him *today*. You'll find him in your phone book!



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UNITED STATES RUBBER COMPANY

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needed modern standard capacity handling equipment so that producers and manufacturers, along equipment industry, will all cooperate for the best interest in establishing industry standards throughout.

Equipment manufacturers should know the standards and build their equipment on the basis of standard packages so that everything will be interchangeable when it comes to handling material, regardless of where—at the shipping point, at the railroad transfer point or dock,

at the warehouse or at the final receiving plant of the manufacturer.

If this is done, this will eliminate a lot of expensive packaging material, labor and freight charges, which are actually a total loss that many are not aware of.

Another good reason for cooperation between equipment manufacturers and users is the mis-application of equipment which results in waste storage space, damage to material, with considerable delays due to broken-down equipment.

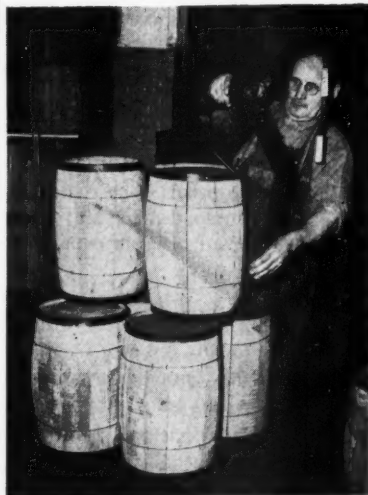
Another item that many com-

panies are not aware of is that they are paying for these special packaged materials in addition to freight charges; further, by not having standard equipment, they are required to use higher runners and other special methods that carry heavy penalty costs. All of this is a very important factor in any business, just as important as many of the present day established departments, and yet you will find that the responsibility and supervision pertaining to all of these phases are just a fringe under some one of the various departments now established. That is what is responsible for the existing conditions.

Once shipping and material-handling minded, I predict that small or large concerns will find that savings gained from handling efficiencies are just as significant as those gained through other operations.

Hoist Grab for Kegs

KEG handling during intermediate storage is simplified by means of this grab used in conjunction with a ½-ton electric bridge hoist. Kegs weighing from 200 to 220 pounds each are handled effortlessly by one operator. And hoist handling enables him



to store the heavy containers vertically, making maximum use of available storage space. The grab is also used for unloading 8-keg skid loads in the packing department.

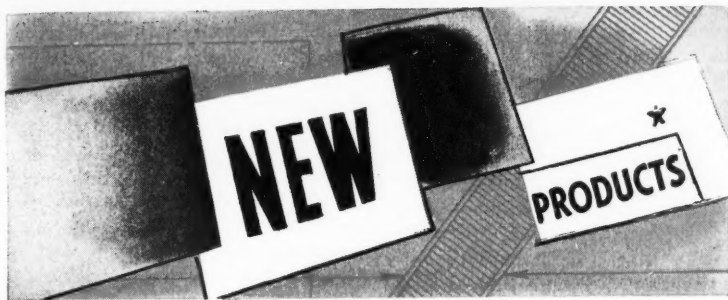
The grab is made of ¾" by 2" iron. Twin hooks are formed at the bottom by splitting the bar. The unit is designed to fit the contour of the kegs. The kegs are held in place during the lift by means of the 15" steel ring shown. The ring drops over the keg and is locked in position by a hinged arm.—Courtesy National Screw & Mfg. Co.

Time Tested



DARNELL CASTERS & WHEELS

DARNELL CORP. LTD. 60 WALKER ST. NEW YORK 13, N. Y.
LONG BEACH 4, CALIFORNIA 36 N. CLINTON CHICAGO 6, ILL.



For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

MOBILCRANE

NP41—The Osgood Company announces its new 1¼ cubic yard machine, Type 71, which is available as both crawler and wheel mounted machine. The Model 710, mounted on crawlers, is available



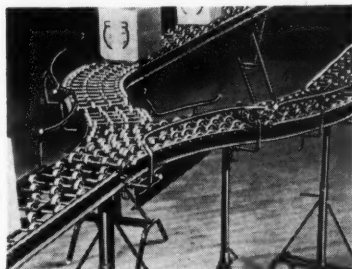
as Shovel, Dragline, Clamshell, Crane, Backhoe, and other combinations, and is said to be readily interchangeable from one class of service to another in the field. The Model 715 Mobilcrane is a pneumatic tired, one engine, one-man-operated material handler. The machine is hydraulically steered, with oil lines carried down through the vertical travel shaft by rotary coupling. Air is also carried down this way for the air brakes, which may be used as both holding and service brakes.

Through the use of an independent travel mechanism, four speeds are available, up to five miles per hour. Gears are shifted by air in the independent travel mechanism, and manually controlled in the transmission of the chassis. Jacks in front, rear, and at the side are used to relieve the tires and to stabilize the machine when making heavy lifts.

CONVEYOR CURVE SWITCH

NP42—A Y-switch curve for use with Rapid-Wheel Gravity Conveyor installations has been an-

nounced by The Rapids-Standard Company, Inc. The switch curve permits users of Rapid-Wheel Conveyors a choice of directing flow of materials through to two possible destinations. Its use allows packages to be sorted and routed separately to designated areas for either storage or shipment, states the manufacturer. The device was developed to permit even more flexible arrangements of extensive conveyor handling installations. The new curve is shaped like a "Y" and its lines curve 45 degrees in opposite directions. The new Y-switch curve is being manufactured in standard widths, 12 and 18 inches, and may be supported on Rapids-



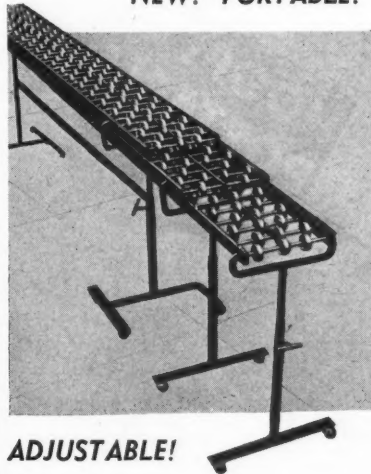
Standard adjustable stands similar to those used on straight sections of the Rapid-Wheel Conveyor, the manufacturer states. Each terminal of the curve is equipped with universal connections to permit coupling with either end of a straight section.

GAS-ELECTRIC DRIVE UNIT

NP43—The Ready-Power gas-electric drive unit, specially designed for use on hand-lift trucks, was recently announced by The Ready-Power Company. This machine, the manufacturer claims, is a small version of the standard Ready-Power units that are used through-

Wilkie Telescopic CONVEYOR

NEW! PORTABLE!



ADJUSTABLE!

Here's a new gravity conveyor (Patent applied for) that folds up to a convenient 10 ft. length—can be easily, quickly moved from one scene of action to another. Simply wheel it to the spot, put on brake, pull out to the desired length and you're all set. Adjustable also in height and pitch. Also, same telescopic feature can be built into a conveyor system. **WRITE TODAY FOR COMPLETE INFORMATION AND PRICES.**

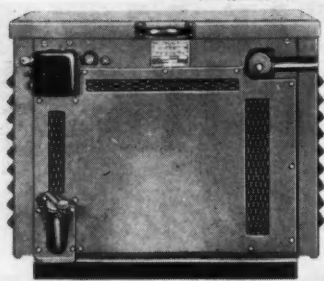
SPECIFICATIONS:

Frame construction, ½ x 1½ x 3/16 channel iron; ball bearing skate wheels, easily adjustable legs with 3" casters (only one leg per section to adjust); pressure brake lock; sizes 10 to 20', 10 to 30', and 10 to 40'.

WILKIE COMPANY

Skate Wheel and Roller Conveyors

5520 ARCH STREET
PHILADELPHIA 39, PA.



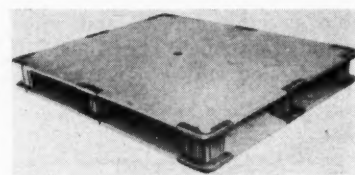
out industry. It makes available to users of motorized hand-lift

trucks all of the operating features that Ready-Power gas-electric drive gives to the users of the conventional electric trucks, it is claimed. The operating speed of this unit may be adjusted to suit plant working conditions and loads being carried. A simple Ready-Power "walking speed control" is said to give three speeds that are entirely independent of the control mechanism of the truck. Housed in a heavy steel enclosure and powered by a four-cylinder, gasoline

engine, complete with self starting, the unit weighs 600 pounds and requires a space approximately 14' x 24' x 32".

PLYWOOD PALLETS

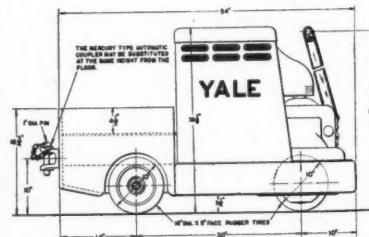
NP44—As companion units for Clark fork lift trucks, pallets made of plywood are announced by the Clark Tractor Division of Clark Equipment Company. The pallet is constructed of $\frac{5}{8}$ -inch plywood decks and posts of plywood blocks or metal, and is light in weight. It is double-faced, designed for four-way fork entry, and can be furnished in the metal-post construction for use with hand-lift or motorized pallet trucks. Among



advantages claimed for this plywood pallet are its unbroken, splinterless surface which minimizes damage to the material load; ease of strapping in both directions, and suitability for safe, firm tiering. Sizes range from 30" x 40" with two-inch vertical clearance and weighing 36 pounds, up to 48 x 60 inches with $3\frac{3}{4}$ " clearance weighing 89 pounds. Capacities are 4,000 pounds carrying load, and 16,000 pounds static load, states the release.

HAND-GUIDED TRACTOR

NP45—An intra-plant towing unit in which electric storage battery power does the hauling but the operator guides, maneuvers and walks the load, is announced by



The Yale & Towne Manufacturing Company. The unit, it is stated, has ample power for hauling heavy trailer loads. Its three wheels are all 10" in diameter with 5-inch rubber tires for full traction

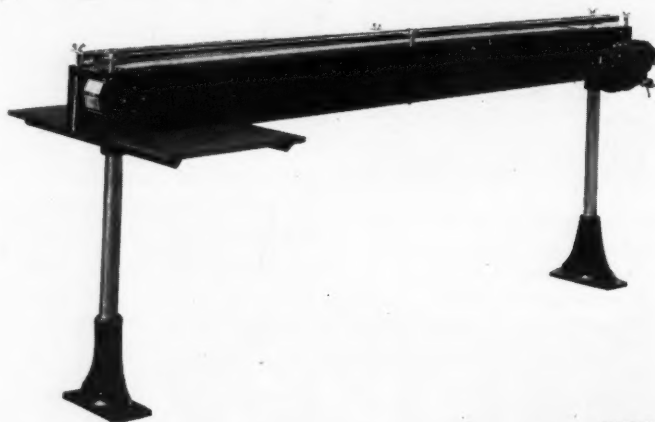
**HOOPER
PORTABLE
CONVEYORS**

**"ACT WISE —
CONVEYORIZE"**



CONVEYORIZE

Hooper portable conveyors are the perfect solution to your problems of material handling. Increase your production and cut cost with HOOPER power and gravity conveyors designed to take care of a wide variety of jobs.



35-79111-

HOOPER FLAT TOP BOTTLE CHAIN CONVEYORS are designed for carrying containers, jars and bottles in dairies and food processing plants. Adjustable guard rails.

Your inquiries solicited.

Gravity Conveyors
(Wheel and Roller)
**Power, Belt and
Chain Conveyors**
(Stationary and
Portable)

J. R. HOOPER COMPANY

Engineers and Manufacturers

SOUTHVIEW AND ARTHUR BROOKFIELD, ILL.

PHONE: BROOKFIELD 1252

and smooth pulling over rugged plant floors and yards. With only 30" between rear and forward axles, extremely short turning radii are claimed for the units. Principal use is expected to be for inside-plant transportation of loads which are, at once, too heavy for manual pushing and too awkward in shape to be handled on platform-type or fork-type apparatus, the manufacturer states.

"CLAMP-LIFT" FORK TRUCK

NP46—A clamping device has been designed for use on Clark Tractor equipment that en-

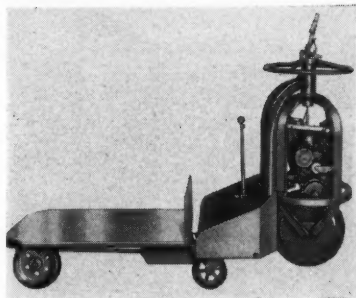


ables a fork truck to pick up and carry as many as 18 crates of fruit or other produce without using a pallet. It is said to be speeding up handling for packers and shippers of fruits and vegetables, with one leading fruit packer reporting that a single fork truck equipped with "Clamp-Lift," engaged in normal routine work, handles 5,000 to 6,000 boxes of lemons in an eight-hour period.

The device, it is stated, handles crates stacked 7 to 9 high, two rows deep. The lifting height is limited to 84 inches. The Elec-Truc-loader can be equipped to handle 9 to 11 boxes high, but lift is restricted to 6 inches. Squeezer arms are hydraulically actuated; and sharp metal pins on the inside squeezer surfaces grip the bottom row of crates, preventing slipping. The load is steadied by an adjustable rack which rests on top of the stack. Boxes are stacked with two-inch spaces between stacks, to permit entry of the squeezer arms.

PLATFORM TRUCK

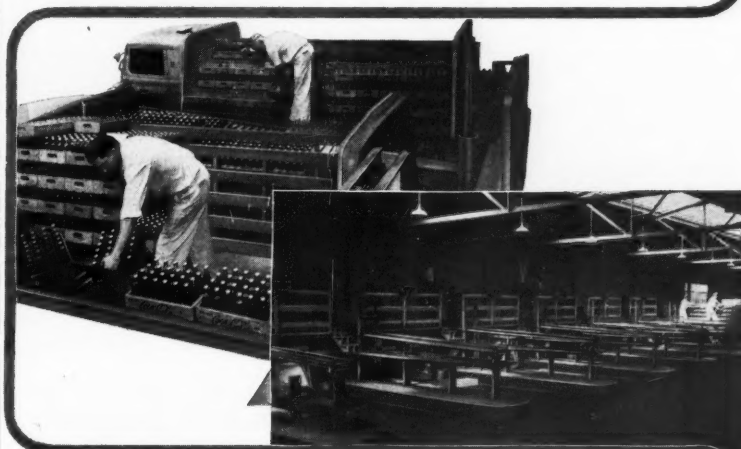
NP47—Announcement is made by The Schwitzer-Cummins Company of a variety of models of small trucks marketed under the name "Load Dispatcher." The units, the manufacturer claims, are of unique



design and rugged construction. They are said to handle easily and quickly through narrow aisles,

around sharp corners, into dead-end spaces, and out in any direction at any angle. The power section is a separate unit, built of heavy welded steel construction, within which the engine is mounted and fully protected. Power is supplied by a 2 HP single cylinder, 4 cycle, air-cooled engine. Reversing the direction of travel is done by flipping the steering wheel and power unit around 180°. The load dispatcher is made in both hydraulic and semi-fixed platform models rated at 3,000-pound capacity. The

TRUE ENDLESS STREAM PRODUCTION!



Why Be Satisfied with Less than an

A-F ENGINEERED Conveyor System?

HERE, ON THE loading dock of this modern bottling plant, is the start and finish of a completely co-ordinated A-F Conveyor System! Here, trucks are quickly loaded and unloaded at the same time! This reversible system is designed so that the conveyor may be lowered to move filled cases to waiting trucks, then raised to speed the "empties" to the receiving and washing departments.

From washing to bottling, to storage and shipping, through every department, cases move in an endless stream because of this A-F Engineered and Completely Co-ordinated Conveyor System. Backed by more than 46 years of experience and skill, A-F Engineers will be happy to explain how handling economies may be effected in your plant. Why not write—today?

THE ALVEY-FERGUSON COMPANY

435 Disney Street

Established 1901

Cincinnati 9, Ohio

Offices in Principal Cities—Coast-to-Coast





Sizes, types and spans to meet over 90% of all material handling.

Maximum service life with minimum operation and up-keep expense.

Standardization and jig machining assures interchangeability of parts.

21 SHIFTS *per* WEEK without grumbling

In other words, a full time job outdoors.

Handling of 10,000 pound bundles of steel bars and billets with frequent overloads, is taken in stride by this Euclid Crane.

From truck and car to stockpile and back to truck and car, this "bottleneck smashing" crane replaced one of another make and has piled up an enviable service record.

THE EUCLID CRANE & HOIST COMPANY
1362 CHARDON ROAD • EUCLID, OHIO



WRITE FOR CRANE CATALOG

SAVE PRODUCTION TIME with a SHOPLIFTER

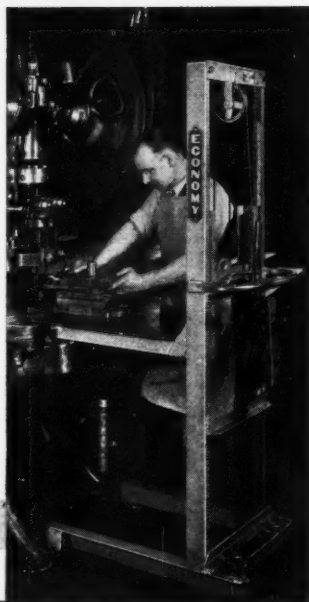
One man can handle heavy dies up to 500 pounds alone. Easily moved about. Also handy for loading and unloading trucks and miscellaneous lifting jobs. Platform 24 in. x 24 in. Lift of platform 4 ft. 6 in. Price \$157.50 (foot operated floor lock optional, \$10.00 extra). Heavier capacities available up to 5000 pounds.

**PROMPT
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Full freight allowed.

ECONOMY ENGINEERING CO.

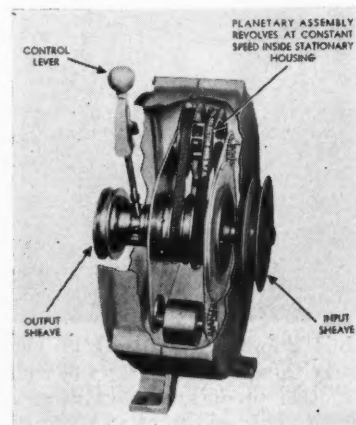
2677 West Van Buren Street
Chicago 12, Illinois



rear half of the platform is hinged and can be inclined downward, providing a ramp to slide the load off or on.

SELECTOR V-DRIVE

NP48—A variable-V-planetary infinite ratio speed selector, designed as an independently mounted transmission, is jointly announced by Speed Selector, Inc., and The B. F. Goodrich Company. The speed selector employs planetary motion with four variable pitch sheaves and two standard cross section V-belts to provide any speed from



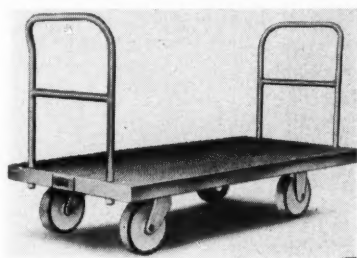
zero to 800 r.p.m. at constant torque, from a constant speed power source, it is stated in the release. The multiplying action of the planetary converts a slight change in sheave pitch diameter to a wide change in output speed. The high and nearly constant belt speeds permit almost instantaneous changes in output speed.

Among principal applications are the following: agitators, bottling machines, candy making machinery, conveyors, cookers, dryers, food processing machinery, hoists, machine tools, mixers, glass making equipment, process machinery, plastic machinery, pumps and textile machinery. Major advantages claimed for the speed selector are: infinite ratio, quick speed changes, smooth operation, high efficiency, adaptability, simplicity, pre-selection of speeds and ease of installation, states the manufacturer.

ALUMINUM TRAILER

NP49—Newest addition to Mercury's complete tractor-trailer line is an all-aluminum trailer or hand

truck. Weighing 175 pounds, the trailer has a nominal capacity rating of 2,000 pounds, and is manu-



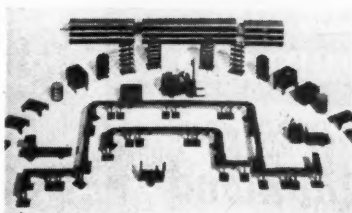
factured with a load platform three feet wide by six feet long by 14½" high. Platform size is subject to variation to meet special requirements. The trailer frame is constructed from aluminum alloy structural shapes, while the deck is non-skid aluminum plate of ¾" thickness. Deck and frame are of welded assembly. Other features include cured-on, solid rubber, tire-type wheels Timken bearing mounted. Wheels are size 10" by 2½"; wheel centers, caster forks and brackets are aluminum alloy type. Racks of one-inch standard pipe, aluminum tubing or steel tubing are available with the unit.

PORTABLE ELEVATOR

NP50—A lightweight portable elevator for handling a large variety of commodities weighing up to a half ton is announced by The Revolver Company. This machine, it is claimed, is simple, and maneuverable. For negotiating narrow aisles, the platform is 22" by 24" and the overall height for clearing average doorways is only 68". It has a lift of 55" and a capacity of 1,000 pounds. It is equipped with a floor lock and swivel casters at the hoist end and has a crank-up, crank-down hoist which allows no gravity drop. The end of the cable is readily placed either on the top of the machine for two-part arrangement, or directly on the platform for more quickly elevating half the load. The cable can also be wrapped around a box or other commodity for bodily dragging same onto the platform by cranking.

MATERIAL HANDLING MODELS

NP51—A complete line of materials-handling equipment, built to



¼" scale, has been announced by Visual Production Planning, Inc. The planning models consist of various types of belt and roller conveyors, rack conveyors, trans-

port, motorized and hand trucks, shelving, bins, tote boxes of all sizes; as well as pallets, skids and skid boxes in most standard dimensions. These models are designed for use with 3-dimensional template-base machine tool models, which have been adopted by plant and process engineers.

PLASTIC-WHEELED HAND PALLET TRUCKS

NP52—The structural design of the Lewis-Shepard multiple stroke



Pallets in use with tilting fork truck right side

Typical pallet design

HIGH QUALITY PALLETS OF SEASONED HARDWOOD

By the Carload or Truckload

To satisfy the growing demand for a well manufactured pallet constructed of seasoned lumber that will "stay put," Sterling has placed in operation a pallet factory at our own sawmill in Alabama. There we will produce high grade pallets of seasoned hardwoods or softwoods, for shipment in carload lots.

These pallets will weigh 30 to 40% less than the ordinary unseasoned hardwood pallets. This is important where manual handling is necessary. Moreover, they

have eye appeal, which contributes to the orderly appearance of a well planned pallet installation.

Sterling also plans to produce a lightweight softwood pallet even lighter in weight than our seasoned hardwood pallet, suitable for handling light bulky merchandise.

For emergency orders or small initial requirements

for experimental purposes, we will continue to produce the same pallets for quick delivery by truck from our Chicago plant, at slightly higher cost.

INDUSTRIAL LUMBER. At our sawmills in Alabama and our distribution yards in Chicago we also produce industrial lumber, crating and cut-to-length car blocking.

Prices will be furnished promptly on individual specifications. For **PROMPT ACTION** call Ivan Anderson, Manager, Pallet Division. Phone Pullman 0221.

**PALLETS
and Lumber**

Sterling Lumber and Supply Co.

11900 S. Halsted St.

Call PULman 0221

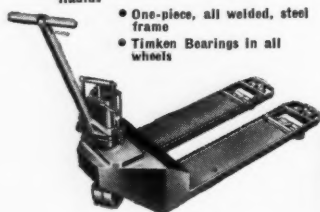
Chicago 28

Whether it's a ✓ SKID LOAD
or a ✓ PALLET LOAD ...

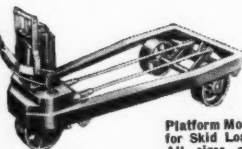
You can handle it quickly, easily and cheaply
with a **LYON-Raymond**
Hydraulic LIFT TRUCK

**Check These
SUPERIOR Features**

- Fingertip lowering control
- High underclearance—due to single frame construction
- Self-contained Hydraulic Pump and Ram
- 360° Turning and Operating Radius



Pallet Model 4000 lb. capacity
—for single or two-faced pallets



Platform Model
for Skid Loads
All sizes and
capacities

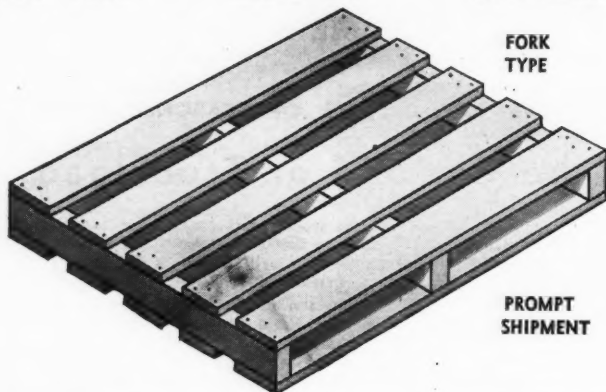
Ask for bulletin describ-
ing these trucks—Consult
us on your Material Han-
dling Problems.

**LYON-Raymond
Corporation**

582 Madison St., Greene, N. Y.

PALLETS

FORK TYPE • HAND LIFT • STEVEDORE



FORK
TYPE

PROMPT
SHIPMENT

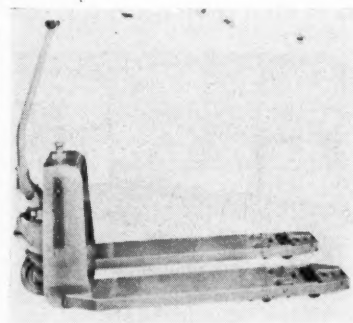
IPCO pallets are sturdy . . . of sound mixed unseasoned hardwoods constructed with cement coated drive-screw nails, hand-driven. The drive-screw nails drive like nails and hold like screws. The Stevedore type pallets are constructed with carriage bolts that have the nuts countersunk. IPCO pallets stand up under the most rigorous service.

Write or telephone for quotations.



INDUSTRIAL PALLET CO., INC.
1616 Woolworth Bldg., New York 7, N. Y.
BARclay 7-8446-7

hydraulic hand pallet truck is said to make it the only truck of its



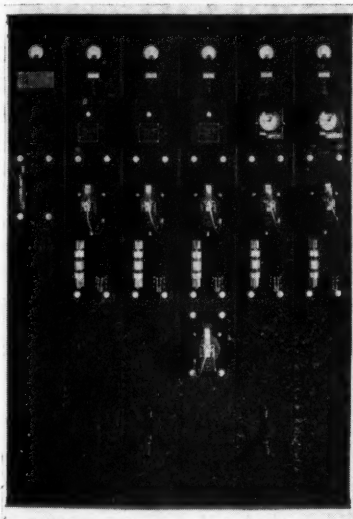
kind on which plastic wheels can be substituted for the standard metal wheels at the end of the forks as well as at the front. The manufacturer claims that this is a factor in helping to reduce wear and tear on floor surfaces. The truck is also equipped with "spring-lift" booster rollers mounted in back of the rear wheels. These rollers, the manufacturer states, will eliminate: (1) bumps caused by the ordinary series of small fixed rollers and (2) the need for chamfering of boards. They will also reduce wear on the pallets, it is said.

Maximum strength is attained due to the modern arc-welded design and strong one-piece box section frame. The truck has a constant wheelbase. Forward lowering makes load spotting quick and accurate. The hydraulic lift is operated through a selective length stroke double foot pedal permitting easy operation from either side of the truck. The truck is built in capacities ranging from 1000 to 6000 pounds, and is adaptable to either single or double, two-way or four-way pallets, according to the release.

BATTERY CHARGING PANEL

NP53—The Electric Products Company announces a Control Panel for Battery Chargers. Easy to install, the panel is shipped completely assembled. It can be stood in its intended location and fastened to the nearest wall by two angle-iron brackets. Since each section comprises a complete charging circuit, it is only necessary to secure a few frame bolts, extend the main power bus with a jumper, and lengthen the control wires. The

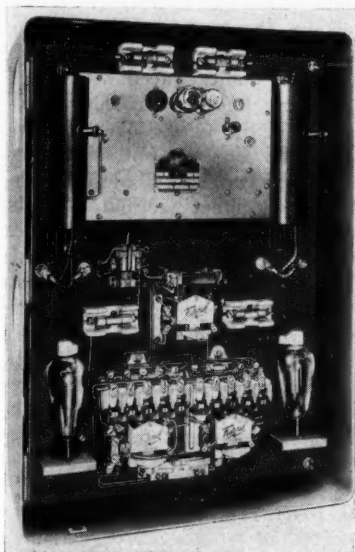
standard generator control section and the five standardized circuit sections meet all battery-charging



requirements, lead-acid or Edison. The panel height of 76" conforms to the standard height of industrial switchboards. All controls are mounted on the front of the board within protecting covers. Dust, dirt and other harmful elements are barred. Covers are easily removed (fastened with only one screw) to permit routine inspection and maintenance, the manufacturer states.

ELECTRONIC MOTOR CONTROL

NP54—Two models of a new electric motor control for operating



DC motors from AC power have been announced by Federal Elec-

tric Products Company. The control was demonstrated in a preview at the Electrical Engineering Exposition in January in New York. It was of interest particularly to machine tool builders, builders of special machinery, and plant engineers with motor control problems. One model is a general purpose, reversing type applied to a 2 H.P., 230 volt D.C. motor, and the second is a special control for an Abrasive M-3 Surface Grinder. The Federal electronic control, the manufacturer states, has demonstrated that it can closely regulate motor speed to provide an almost flat speed torque curve with changes in load having little effect on speed. For any speed setting, performance is practically equal to that of a synchronous motor even with a suddenly applied load, the release states.

Conveyors Are Greenhouse Aids

SMOKE BROS., wholesale-retail florist of Detroit, Mich., handles a large volume of potted plants and bulb flats every day. Transporting the loads up and down the long greenhouse aisles is speeded up, manhours are reduced, and worker efficiency is increased through the use of a gravity wheel conveyor. An example is the use of the equipment in the handling of new-



ly-planted bulb flats. The flats—low-sided 12" x 24" boxes—must be filled with dirt, 45 to 47 bulbs planted in each, and the resulting 75 to 100-pound loads transferred to the cold bulb-shed 80 to 100 ft. away. Here they are tiered eight high, with small flower pots as separators between each layer. With the aid of the conveyor five men can plant and handle 480 flats (22,560 bulbs) in three days. The job formerly required considerable heavy lifting and carrying, and at least four days to complete.

When plants in one greenhouse

must be moved to another—the layout covers 45,000 sq. ft.—sections of the conveyor are put through one of the 16" x 20" windows, or a completely hinged section is lifted and the equipment set up. Potted plants are placed in flats and the transfer is completed with a minimum of lifting and carrying.

Rod-Thru-Barrel Hoist Connection

PROBLEM: was the rod to which the chain is attached inserted before or after the barrel was filled? Either way, its use, in conjunction with a trolley hoist, made a speedy and easy job of one which would otherwise have been slow and awkward. Perhaps the idea would work in a corner or two of your plant.

In this case it's ashes. The drum is filled back at the furnace, the electric



hoist does the lifting, and the trolley mechanism makes for easy delivery to the dumping point.

This rod-thru-barrel idea may be used in the handling of other types of waste (dross, broken ware, etc.), in moving raw ingredients to mixing equipment, in immersing parts in cleaning solutions, and so on. In the illustration a plain bar is used, but for more regular use the rod might have an eye or loop at the center to prevent the hoist hook from sliding, or a heaping barrel-load from burying the connection (as shown). The rod might also be notched at the points of drum contact.

Answer to the question: the rod was inserted before filling the barrel.—Idea and photo, courtesy of The Yale & Towne Mfg. Co., Philadelphia Div.

YOU MAY WIN

See the announcement of the FLOW cost reduction contest, page three. Read the rules, then send for your entry blank. You may win part of the \$1,500 prize money offered.

Here are 4 basic requirements in



Goods arriving by highway vehicle are immediately palletized and moved to storage by fork trucks.

**FORK TRUCKS
PALLETES, ELEVATORS**

Belt conveyor speeds boxcar unloading on second floor. Note small palletization area.



MECHANIZING A WHOLESALE GROCERY WAREHOUSE

This wholesale grocery company overcame a twofold problem when it revamped a former industrial building in order to adapt it to pallet handling as part of a modernization program. Example of gains made: an average daily saving of 108 manhours in unloading boxcars.

IT'S easy to design the latest type of mechanized handling operation in a million-dollar plant constructed for the purpose, but to this wholesale grocery company belongs the credit for engineering an efficient system in a former automobile plant. Faced with much the same building problem as all industry, the Grosse Pointe Quality Food Co., Detroit, revamped the structure and adopted the fork-truck-pallet method in order to streamline operations for a steadily growing business volume. The muscle work of former times was no longer adequate for a business volume in the eight figures brackets, with an average of six carloads and 12 truckloads arriving every day and 25 to 30 truckloads (about eight tons each) being shipped out.

Four Vital Points

The four important factors considered by the Grosse Pointe management, given below, are basic in

any similar operation and should therefore figure in the planning of anybody's "ideal warehouse:"

1. A layout designed for efficient receiving, storing, selecting and shipping.

2. Storage methods and practices that utilize all storage space, and allow the withdrawal of stored merchandise with the greatest ease and speed.

3. A method of mechanical handling most efficiently adaptable to the structural layout, one that moves the greatest volume over a given distance in the shortest time.

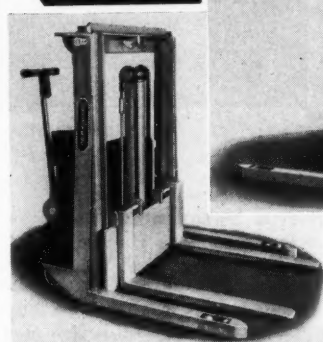
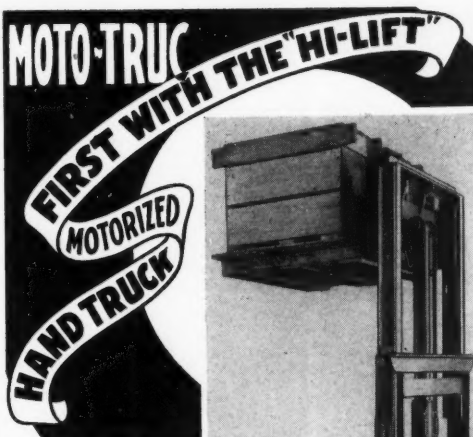
4. Receiving and shipping facilities that will minimize the terminal time of equipment, and eliminate the piling up of goods in transit.

Here are the highlights of the major changes and adaptations made to implement this program.

1. The building layout and warehousing methods were refined to improve the workability of the various departments. This involved the laying out of adequate aisles and rearrangement of stocks. 2. The second floor was made more readily accessible by the installation of additional hydraulic elevators. 3. The purchase of four 2000-pound electric fork trucks and 8000 30" x 40" pallets. 4. Flat trucks and semi-live skids formerly used for the bulk of all handling were redesignated to handle only individual order selection and small lots. 5. An intercommunication system was installed throughout the building. To handle the increased tonnage two covered receiving-shipping docks were constructed.

Existing structural characteristics that had to be considered were, first of all, the 150,000 square feet of floor space in the two-story building; then, a hard surface floor with a 250-pound floor load, a ceiling height of 14 feet, and 20' x 20' bays, that is, a supporting column spacing of 20 feet, center to center.

As the flow diagram shows, the resulting layout provides first-floor space for both an adequate order assembly line and a large reserve stock area. The second floor is devoted entirely to reserve storage, except for a small area used to palletize goods coming in by rail on the spur line running alongside the building's second-story rear doorway.



ALL CONTROLS IN HANDLE

Two speeds forward and two reverse by a twist of the wrist, push buttons for lifting and lowering. Spring return handle with safety dead man control.

2,000 pound capacity. 80" telescopic lift, 96" overall height, 60" collapsed height.

Made with standard forks, inserted forks, or platform.

Operated by 12-volt motor and battery.

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Let Us Supply You
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THE RIGHT PALLET

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at the Right Place — at the Right Time

Pallets Made of Hardwood —
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Learn the economy of a rental program for the entire materials handling system and how it can be arranged.

Mill connections in Ohio, Pennsylvania,
New York, Virginia, Georgia and
Arkansas.

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OR
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FOR
FURTHER
INFORMATION

PALLET SYSTEMS, INC.

GUARDIAN BUILDING
CLEVELAND 14, OHIO



When needed, reserve stock is delivered to selection line via truck and hydraulic elevator.



Fork truck handles large supermarket orders. Semi-live skid is used to pick up small ones.

Reduce Case-By-Case Handling

As indicated, a primary objective of the new system was the elimination of all unnecessary case-by-case handling. Goods are palletized at the receiving points, and full advantage is thus taken of the cube in the warehousing locations. Whenever goods are purchased at some other warehouse, a company truck is sent to pick it up with a load of empty pallets. This eliminates rehandling when the goods are delivered to the home warehouse.

To make the second-floor reserve areas more readily accessible, three five-ton hydraulic elevators were installed. Each of them has a 512-cubic-foot capacity, and will easily handle 6 of the 30" x 40" pallet loads, double decked. This

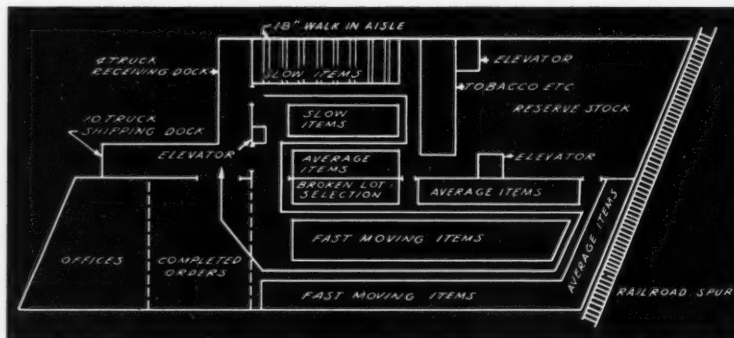
size pallet, incidentally, was chosen because a satisfactory load unit can be assembled with almost any size case or box. Too, this size permits pallet shipments in trucks of solid loads of five or six items.

Stock Turnover Determines Location

Plans for the order assembly line made provision for a full representation of all stock in a minimum of space, thus eliminating the need to travel over the entire warehouse to fill an order. Product demand or turnover was likewise given primary consideration, with the result that slow-moving items are located at the beginning of the line, and the faster moving stock near the end. This layout frequently enables order clerks to pick up an entire order near the end of the line, reducing travel.

Nine-foot aisles are maintained throughout the selection area to facilitate the replenishing of depleted stock by lift trucks, as well as to allow room for the equipment to pass and turn around. This constant replacing of depleted stock is supervised by an expediting foreman who circulates through the warehouse and keeps a continuous check on the supply of all merchandise. It is also his responsibility to maintain ade-

Layout of departments designed according to turnover and handling needs.



View of an 18-inch walk-through aisle.



quate reserve stocks. Quantities must never fall below at least a duplicate of everything on the selection line. This foreman's work is greatly simplified by the intraplant intercom system that enables him to call truck operators whenever necessary.

Goods placed in the "slow-moving" sections are arranged four pallets deep between main aisles, with 18-inch "walk-through" aisles between the two "middle" units to provide ready access to the different products on these inside pallets. On the other hand, each type of "fast-moving" merchandise is lined up four pallets deep because of the quantity constantly needed to fill orders. So, access aisles are obviously unnecessary. "Super-fast movers" are kept in pre-assembled units in the first-floor reserve stock room. When needed, each load unit can be immediately moved by fork truck to the shipping room. This system is particularly useful in filling large super-market orders. Also for accessibility, the small or broken lot items are kept on racks near the end of the line, and perishables, such as tobacco, candy, etc., are kept in a special room where they can be safely held until shipping time.

Palletized goods in the reserve stock area are tiered either two or three high, depending upon size and weight. However, a minimum of 18 inches is maintained between the boxes and the ceiling to provide adequate operating space for the fire-control sprinkler system. On the order assembly line, on the other hand, goods are kept at one-pallet height in order to allow fast, easy selection without heavy lifting or respotting of loads. When an order has been filled, it is moved into the completed order room, where it is checked out for shipment.

New Receiving-Shipping Facilities

Facilities for the receiving and shipping of the increased annual tonnage were provided with the installation of a four-truck receiving dock and a 10-truck shipping dock, both of which are covered for protection of the goods. On the receiving dock all goods brought in by truck are palletized for immediate transporting to reserve



**IMMEDIATE
SHIPMENTS —
ANY QUANTITY!**

Our Pallets are of sound Adirondack unseasoned hardwood. We use cement coated drive-screw nails for assembly. Our deck lumber is all smoothly planed and sized giving an even surface throughout.

Write or phone for prices

NORTH HUDSON WOODCRAFT CORP.

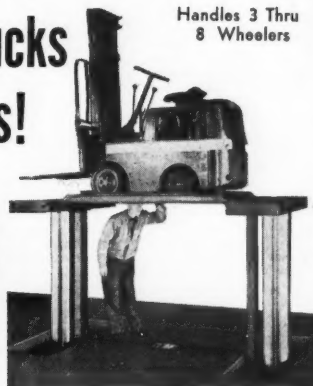
Phone Dolgeville 5251

DOLGEVILLE, N. Y.

Users of Fork Trucks and Tow Trucks!

Handles 3 Thru
8 Wheelers

**SERVICE YOUR
EQUIPMENT IN
1/3 THE TIME**



Check the methods now being used to lubricate, inspect and repair your "rolling stock." Then you'll see why you need one of these new Rotary Factory Truck Lifts to do the job faster, better and cheaper. Safe and trouble-free . . . based on the successful hydraulic auto lift principle. Compressed air or electric pump

operation. Adjustable runways handle varying wheel spacing. Can be loaded from either end. This new lift is a "must" for plants with fork trucks and similar equipment. Write for literature and prices on Model FLT-1.

ROTARY LIFT CO.

1053 Kansas, Memphis 2, Tenn.

Rotary
MEMPHIS

FACTORY TRUCK LIFTS

**THE SKY'S THE
LIMIT — OR
NEARLY SO
WITH RACKS
ARRANGED FOR
EASY STACKING!**



We specialize in the manufacture of storage and tiering racks, pallets conveyor baskets, wheeled racks, etc. made to solve the customer's individual material handling problems.

Illustrated above is a typical rack of square tubular steel. Combining light weight with adequate strength, a rack of this type is ideal for users of fork trucks and those wishing to stack racked material high in storage areas.

Our engineering department is always available for assistance in the design of equipment. Tell us your needs. No obligation, of course.

**VARIOUS TYPES
OF TIERING
DEVICES USED**



HALF CUP



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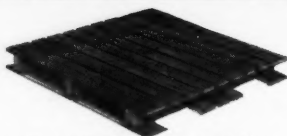
CUP

PERKINS BRIDGE & SUPPLY CO.

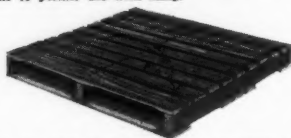
FLUSHING, MICHIGAN

**PROMPT SHIPMENT AT LOWEST
PRICES ON ANY PALLET**

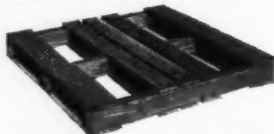
**ORDER FROM
1 CAR to 100 CARS!**



No. 1—Stevedore, or Cargo Pallet.
Non-reversible, double-faced, with over-hanging deck boards to permit use with slings.



No. 2—Standard Double-Faced Non-Reversible Pallet.
Slatted deck design. Bottom boards are spaced to permit entry and elevation by either hand-truck or electric fork trucks.



No. 3—Reversible Double-Faced Pallet.
Both upper and lower deck boards are spaced to permit entry of pallet trucks.

What are your pallet requirements? Write, wire or phone for prices on our line. We believe we can offer a lower quotation than any other pallet company in the country . . . and furthermore make **PROMPT SHIPMENT!** Ozark Pallets are outstanding in constructions and utility. They are everything you demand in a pallet. Contact us **now**.

Representatives Wanted!

Attractive commissions can be earned by our sales agents. Get our proposition. Many good territories still open.



**CHAMFER END BOARDS
FOR EASY TRUCK ENTRY**

OZARK PALLET COMPANY

P. O. BOX 63,

BERGMAN, ARK.

PHONE L. D.

storage by fork truck. The new shipping dock is adequate for the 25 truckloads sent out every day. The extra railroad spur, previously mentioned, is another part of the new facilities.

And goods that are now unloaded directly into second-floor storage were first moved away from the congested unloading area, and then rehandled to storage. With the old method, it used to require 12 men to unload and pile in storage two cars in four hours. Today, five men unload and store two cars in two-and-a-half hours, a saving of 35½ hours, or 108 manhours on the daily average of six carloads. This same ratio of time saving is also evident on the 10 to 15 truckloads of merchandise coming in at the receiving dock, where everything is palletized.

This saving in time stands the company in good stead, because today's greater volume requires all available manhours. The management estimates that the over-all production increase per manhour with the new method is about 66 per cent over the old.

A Long Neck

THE 45-ton capacity "Whirley" (re-
volving traveling) crane purchased from a West Coast shipyard finds a practical yard application for this manufacturer of earth-moving equipment. The self-propelled crane travels the full length of the yard—about



two city blocks. Since the yard is fairly narrow and the crane has a 115' boom, it can reach every part of the outside storage area. The "Whirley" has speeded up material handling considerably, moving billets, plates and beams. It is also used for unloading freight cars and highway trucks, as well as to load material from stockpiles to industrial shop trucks for transfer to the various processing departments.—Courtesy, Gar Wood Industries, Inc., Buckeye Tractor Ditcher Division.

Catalogues

LITERATURE and BULLETINS

The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

309 — Air Controlled Shovels, Cranes, Draglines . . . A 12-page folder is offered by The Osgood Company, describing its air controlled tracked and wheeled cranes, draglines, clamshells, and backhoes. Detail photographs and specification tables supplement descriptions of various power units and controls.

310—Cranes, Monorail . . . Four six-page folders of its overhead handling equipment are offered by The Industrial Equipment Company. Various single-girder push-type bridge cranes, hand-gear type bridge cranes, jib cranes and monorail systems are described in detail. Numerous product applications are illustrated.

311—Mobile Crane . . . The Silent Hoist Winch & Crane Company offers a six-page folder describing its mobile swing-boom crane which operates both on and off tracks. Included is a reach and capacity chart for various boom lengths, and detailed specifications. Photos show the unit in operation.

312—Electric Chain Hoists . . . Whiting Corporation has published an

eight-page bulletin which completely describes its line of Electric Chain hoists. The bulletin analyzes the need for hoists, describes the operation and gives complete specifications, speeds, etc.

313—Planning Models . . . A 10-page folder is offered by Visual Production Planning, Inc. It illustrates a wide variety of machine models, conveyor models, load carriers, etc., for use by engineers in making three-dimensional plant layouts which serve as visual aids in streamlining production flow.

314—Selenium Rectifier Equipment . . . A new issue of the Federal Standard Selenium Rectifier Equipment's booklet, containing the latest code numbers, is offered by Federal Telephone and Radio Corporation. It covers such Federal Standard Selenium Rectifier items as general purpose power supplies, industrial power supplies, general purpose battery chargers, cathodic protection equipments, central station battery chargers and telephone battery chargers.

OPPORTUNITIES

Men wanted Jobs wanted Lines available

MEN WANTED

Materials Handling Engineer

Large middle west glass manufacturing company needs man experienced in material handling. Should have experience in conveyors, battery and gas driven trucks, palletizing, heavy packaging, warehousing, freight, and truck shipping. Previous glass factory experience not essential. Should be competent to analyze present material handling methods and make recommendations for cost reduction.

Give details of personal qualifications, age, work history, and photograph if available. Box 4347, FLOW.

REPRESENTATIVES WANTED

To Handle our line of molded-on, cushion, and pneumatic rubber tired wheels, casters and barrel trucks. Must be calling on buyers of this equipment in your area. Handle our line on an exclusive basis. Commission ranges from 20% to 10%. Must be well acquainted with your territory. Advise other lines you now handle. Box 5247, Flow.

POSITION WANTED

Materials Handling Sales Assignment, 5 years sales new and used materials handling equipment, presently employed, available immediately. Chicago area, Box 5147, FLOW.

LINES WANTED

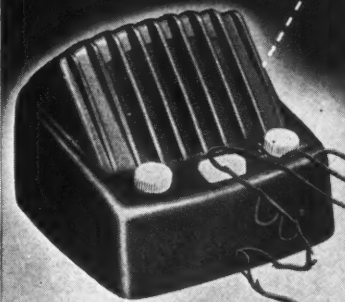
Manufacturers' Representative
New York City Area
Seeks Agency for a
Fork Lift Truck
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Have Large Sales Organization, Warehousing Facilities, and Maintenance Department, Box 7146, FLOW.

Reliable company wishes to represent manufacturer of mechanical equipment in Michigan on a commission basis. We pay our own expenses. References furnished. Please send details.

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TALK INSTANTLY
WITH THE
New 1947

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Give orders . . . get action . . . gather information . . . with the New **FLEXIFONE**! No waiting for operator, no dials or buzzers. Save Time, money, steps and nerves. Executive decisions are swiftly, clearly carried to the man you want—or you can hold a rapid **FLEXIFONE** conference with several men, each at his desk! Choice of several models with capacities up to 20 connections.

Mail coupon today and let free folder show you how **FLEXIFONE** gives you *Wings for Your Words.*



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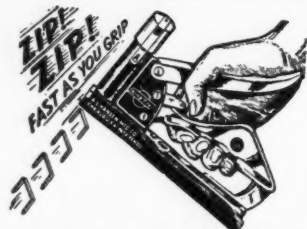
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INTERCOMMUNICATION SYSTEMS



HANSEN TACKERS OF SHIPMENTS PUT THE GO IN FLOW

GET those boxes tagged and on the go. Tag them with the speedy zip-zip staple-driving action of the Hansen one-hand automatic Tacker.

Hansen Staples for use in Hansen Tackers are made in eighty different sizes, widths and lengths—in strips for convenient use, and packed in the Blue Box.



All Hansen Staples are packed in the distinctive Blue Box imprinted with the Hansen Trade-Mark as quality assurance.

A. L. Hansen Mfg. Co.

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There are Pallets and PALLETES...

In pallets, as in everything else,
KNOWLEDGE + EXPERIENCE =
results . . .

One of the largest handlers of materials in the nation recently tested 24 types of pallets. Only OUR correctly-engineered economical hardwood pallet and two heavy and costly metal pallets were found to have the structural strength required for these severe operations. (Full particulars on the tests are available on request.)

We welcome the opportunity to assist you in palletization.

PALLET Sales Corporation

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WE SERVE THE NATION

Continuous Flow for Housings . . *Continued from page 33)*

where the separate housing sections are removed and prepared for the butt welding operation. This joins the two finished parts into the completed, 84-inch axle housing. The heavy, awkward units are moved to and from subsequent trimming and welding operations on inclined wooden tables located between the machines. The nearly completed housings are now ready for machining, the final operation in the manufacturing process.

The housings are stacked in criss-cross loads on six-wheel caster trucks, shown in one of the photos. These four-by-six-foot load carriers are made of heavy channel iron with pipe rack sides to support a load of 90 housings. The trucks are also equipped with lifting lugs for crane handling. Thus, they can be moved to the machining station either by bridge crane or by tractor, and back to the trimming department by hand.

The long and bulky axle housings progress through the numerous

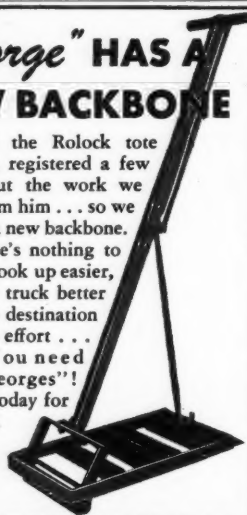
work stations in the machining department on sliding ways made of parallel tubular supports. Similar sliding ways permit the housings to be gravity fed approximately 20 feet to the final inspection station.

The okayed housings are disposed of on a sliding ways that extends through a wall opening between the inspection booth and the shipping room. The latter is about 12 feet wide by 36 feet long. To avoid the necessity of carrying the finished axle housings individually through the oblong area (it is too narrow for effective use of additional load carriers) the sliding ways are caster-mounted and run in a channel track. The loads on the sliding ways are thus advanced to the end of the shipping room to permit orderly stacking without excessive walking.

Thus, the conveyor system coordinates the many processing departments in the several buildings, both feeding and removing the work in a continuous stream. In addition to the advantage of continuous flow, the system has also made possible these additional gains: 1. Present production schedules can be regulated according to need, since the rate of travel of the lines is adjusted to the capacity of the machines, providing a balanced operation. 2. Economies of motion are realized because the lines carry the work at optimum working height for processing and disposal. 3. The former congestion due to intermittent handling—a hampering influence—has been eliminated. 4. The system uses a minimum of floor area, thus leaving a maximum amount for production purposes. When the line travels close to the ceiling, the floor space underneath is available for work areas. 5. The resultant improved housekeeping has meant a decided contribution to plant safety and better working conditions.

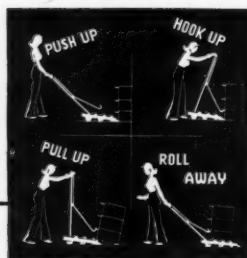
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11 METHODS—ONE SYSTEM . . .

(Continued from page 45)

is beneficial to output. But if they have to switch to different shapes and designs this rhythm is naturally broken. The "one design at a time" handling, the company has found, has contributed appreciably to production in this department. The tables temporarily removed on the casted platforms are returned to the line when that particular style is being run.

The conveyORIZED layout of the entire finishing operation can be seen at a glance from the accompanying diagrammatic sketch. It shows the seven parallel lines, which are slat conveyors similar to the one operating on the second floor. As can be seen, the lines are paced from 2.3 feet per minute to 9.1 feet per minute, depending on the type of finishing done on each. After most of the finishing operations, the lines move through drying ovens built over them, and at the end of each finishing step the tables are transferred to the start of the next conveyor in line. In this manner the products flow in a continuous stream, pacing the operators, from stain spraying, seal spraying, etc., to the final lacquer spray, performed at the end of Line No. 7.

Production averages about 100 tables an hour on a fairly complicated design, while as many as 160 tables of a simpler design are finished in the same time. This production rate speaks well for the continuous conveyor flow in this department.

Conveyorized to Packing

As the tables are removed after the final lacquering, they are placed on double-deck casted racks (45" x 108") and are lined up for overnight drying. The upper deck on these racks or shelf trucks is approximately 34 inches above the lower one, and swivel casters at one end make for easy steering.

The next move is to the adjoining rubbing room. Here the loads are spotted for the convenience of operators stationed at their machines on both sides of a slat conveyor, which is about 150 feet long and travels at the rate of 12 feet a minute. The rubbed tables are de-

posited on the conveyor, and along the second half of its length the final waxing and wiping operations are performed. The line then moves through a wall opening past an inspection station, and from here the units are carried to packing.

The full cartons travel over a gravity conveyor line through the case sealing machine and then under the compression belt. Because of the relatively large size of the shipping containers, the load carriers at this point are rubber-tired 4-wheel flat trucks with a bed measuring seven feet long and two feet wide.

The loaded trucks are taken by elevator to the first-floor loading docks where they are usually run directly into outbound freight cars or highway trailers. (Storage is still the exception.)

Thus, the old-time work of cabinet-making, long considered a highly individual handicraft, is making increasing use of advanced handling devices and techniques in the interest of low-cost mass production. The resultant economies aid in bringing this product within the means of an ever-widening circle of the buying public. And by use of the methods described (subject, of course, to improvement) the company is prepared to supply its share of the seven to ten tables used for practical and ornamental purposes in each of America's 30,000,000 homes.

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"Heavy Traffic Overhead" — an operation in a paper board plant in which an impressive tonnage of baled material is handled by high-speed hoists, and five-ton rolls by two types of cranes . . . Carloads of textile products flow through this warehouse in packing, storing and shipping. A detailed report on the devices and methods used in routing a large volume through this multi-story building . . . How a steel belt conveyor was adapted to moving sponge rubber from the banbury to the slab mill. An illuminating case study, complete with figures on economies and production increases obtained . . . This manufacturing chemist is tiering carboys of acid. Detail drawings given will enable you to adopt this method. These are some of the on-the-scene reports for June and other early issues of FLOW.

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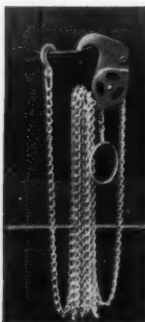
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The Hands of Cranes and Hoists . . . (Continued from page 24)

objects. The advantage of the motor operation in this case is, of course, both speed and low headroom. It also keeps the operator away from the load being lifted. Grabs are also designed for air and hydraulic operation, whose application is somewhat localized.

Up to this point the examples have covered lever-operated grabs for gripping, motor-operated types for adjusting and, in the paragraph immediately preceding, a type which lifts the load by merely supporting it. The latter comes in a large variety of designs which merit a fuller discussion.

Load-Supporting Types of Grabs

Figure 9 shows a simple grab of this type. It is supporting a pan on which material of all types can be based—for example, coils of brass going into a furnace. Or palletized boxes could be handled with this type. In this case, the legs merely swing in and apply

very little pressure against the object, the pressure applied being much less than that necessary to grip it. Hence this type is also suitable for fragile units which must be supported for proper handling. The legs are swung out so as to enable the grab to go over the load. With this simple type, a man is required on each side to swing the legs, although in certain operations one man alone can do the loading.

A design similar in function to No. 9 is the one shown in Figure 10. This grab is adjusted to the load by one man who turns the handwheel to move the legs in and out. This is the function of the motor in the design shown in Figure 8.

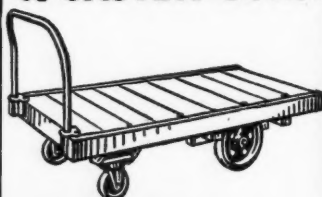
Another type of grab is equipped with a chain wheel on the end and a chain long enough to be reached from the floor. A variation of this design comes with a chain wheel both on the side and on one end. This makes it possible to start the load regardless on which of its sides the aisle happens to be. This grab is also frequently made without the end handwheel but with the side handwheel only. This is done in cases where it is desired to place the loads on a conveyor, the line of the conveyor being parallel to the long dimensions of the load. Thus the operator would be properly stationed at one side of the load.

Another type of grab used for supporting the load is shown in Figure 11. While it shows the handling of large coils of steel, the same method is also used for large sewer pipes. A similar type, well known, enters the cores of horizontal paper rolls.

In view of the many types of grabs that have been developed, an article such as this must necessarily be confined to a representative selection of typical grabs widely used in industry. (One specializing manufacturer alone has already developed more than 400 different designs.) Hence this discussion has concentrated on principles of grabs and their general application. An article next month will deal with specific applications under actual operating conditions.

Photos and data, courtesy Man-saver Industries, Inc., New Haven, Conn.

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ON THE PALLET . . .

(Continued from page 46)

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In such a plant, coal quality will not be an important factor. Run-of-mine coal can be used as it comes from the ground, eliminating expensive cleaning and screening costs. According to reports, the high volatile coal of the Pittsburgh region should be very satisfactory.

It is estimated that the pilot plant will be built the latter part of this year. Part of 1948 would be devoted to operating it and collecting essential data. Running parallel with the pilot plant work, plans will go forward for the big plant so that by the latter part of 1948 and early 1949 the company can activate plans for actual construction. It is expected that the large plant can be in operation by 1950 or 1951.

It is thought that this project may hold one of the most promising possibilities for the future development of the fuel industry, and it may lead to a broader use of the nation's tremendous coal reserves.

AN INTERESTING opportunity for cost-wise material handling engineers is announced on page three—the FLOW cost reduction contest. Send for your entry blank. You may win part of the \$1,500 offered.

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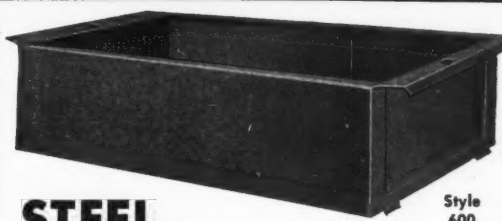
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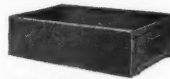
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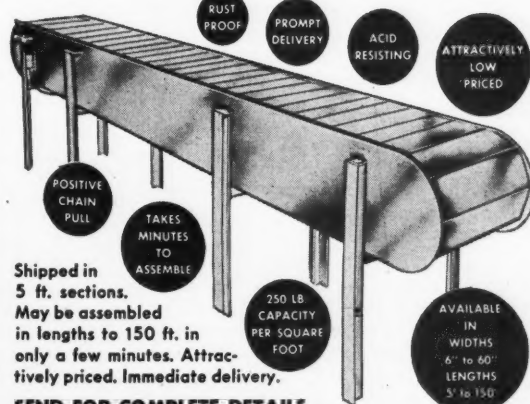
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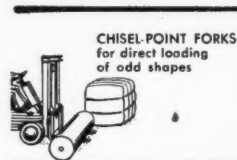
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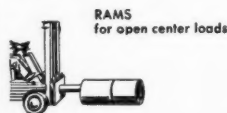
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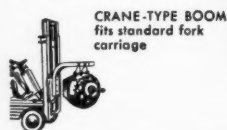
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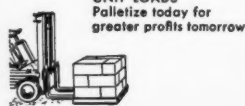
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RAMS
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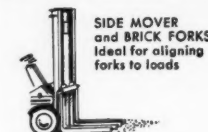
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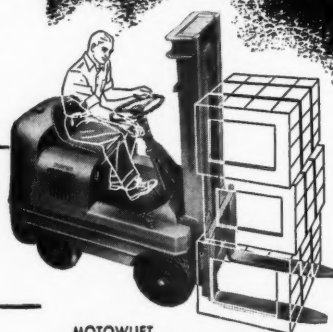


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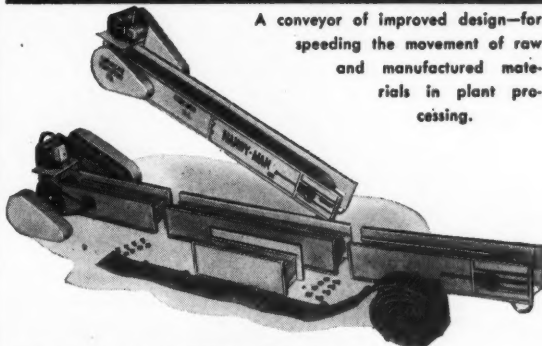


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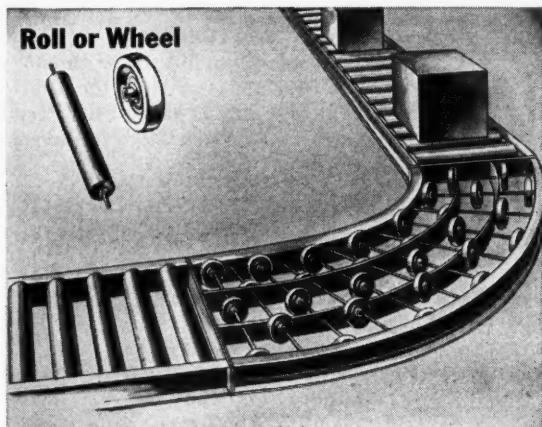
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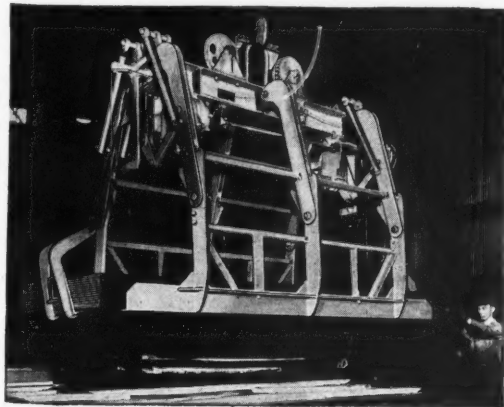
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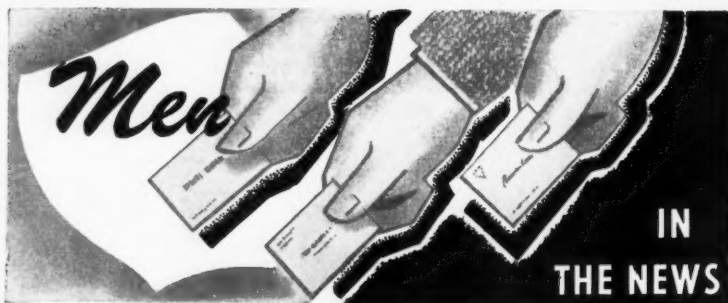
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E. C. LOW, vice president in charge of sales, John A. Roeb-ling's Sons Com-pany, an- nounces the ap- pointment of J. F. Berger to the position of As- sistant Sales Manager, Wo- ven Wire Fa- brics Division.



J. F. Berger

Berger has been with the company for 37 years. He has had long experience with the Woven Wire Fabrics Division, and is well known by mining and quar-ry men all over the country. His appointment is coincident with a program of expansion in both ma- chinery and products for the Wo- ven Wire Fabrics Division. This expansion is part of Roeb-ling's \$6,000,000 investment in moderni- zation and enlargement of produc- tion facilities.

THE Harnischfeger Corporation has announced the appointment of Ralph D. Holcomb as



R. D. Holcomb

General Sales Manager. He will direct the sales of all P & H products, ex- cavators, road machinery, hoists, cranes and welding equipment. Hol- comb's eleva- tion to his new post follows 18 years of continuous service with the P & H organization. During this period, he has directed sales in many sections of the country, his latest position being that of Dis- trict Manager for the San Fran- cisco territory. In addition to his long experience in field activities, he also served as Sales Manager of P & H's Large Excavator Division from 1940 until 1942.

WILLIAM M. HUFNAGEL, district sales manager, Link- Belt Company, has been placed in charge of the company's new office, located in The Century Building, Milwaukee, Wisconsin. He will be assisted by H. B. John- son and F. E. Sweeney. Hufnagel started his Link-Belt career in 1924 when he became a summer-time employee at the Ewart plant.

CHARLES EDGAR SMITH has been advanced to the newly created position of executive vice-president of The Towmotor Corporation. Smith, who joined Towmo- tor as sales manager in 1941, has been vice - president since January, 1943. Previously he served as branch manager for the American States Insurance Com- pany with headquarters in Cleve- land.



C. E. Smith

HAROLD L. POSNER has been named President of Pallet Sales Corporation, New York City, succeeding Mortimer A. Lowe, founder of the parent organiza- tion, who died in December. Pos-



H. L. Posner



C. H. Barker

ner, an alumnus of the Massachu- setts Institute of Technology, was associated with Lowe in the early days of the Pallet Sales Company, but resigned to enter government

service and later engage in war production work. Curtis H. Barker, Jr., consultant in the field of ma- terial handling, and a graduate of Stevens Institute of Technology, has been designated vice-president and director of research and serv- ice. During the war, Barker was Technical Director of the Field Operations Branch of the U. S. Navy Department. In this capaci- ty, he organized the original con- tainers and Materials Handling Section of the Bureau of Supplies and Accounts and instituted many improvements that have received wide acceptance throughout indus- try.

CHARLES E. LYDECKER has joined the sales engineering staff of Herbert B. Cumming, Inc., Northeast- ern New Jersey sales represent- ative for the Automatic Transportation Company. He was formerly in the engineering department of American Airlines. A graduate of the Hackensack, N. J., public schools and Stevens In- stitute of Technology, Lydecker entered active duty with the navy in 1941 and served in the United States, Canal Zone, and the Pacific area as an aircraft maintenance officer.



C. E. Lydecker

ALVA E. RADCLIFFE has joined the sales staff of the Barney Florey organization, Cleveland and Northern Ohio sales represent- atives for the Automatic Transportation Company, manufacturers of electric indus- trial trucks. A native of Chicago, Radcliffe has been Cleveland dis- trict manager of Thomas A. Edi- son, Inc., Battery Division, since 1941. Prior to that time, he repre- sented the company in Chicago. An electrical engineer educated at Illinois Institute of Technology (formerly Armour Institute), Rad- cliffe served in the U. S. Navy air force during the first World War.



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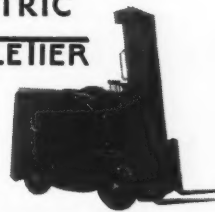
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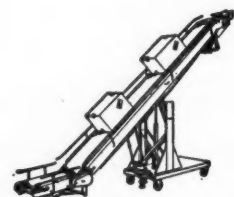
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We reiterate, at the risk of creating boredom, that the most important single decision in the installation of a fork truck-pallet system is the selection of the proper pallet. It must be, among numerous other requirements, the following:

- ... Large enough to form truly economical loads.
- ... Small enough to maneuver in reasonable aisles and working areas.
- ... Of a size that permits practical loading patterns of your commodities.
- ... Of a design that permits adequate strength with low purchase cost and minimum maintenance.

ENGINEERED DESIGN WILL correlate the required physical and mechanical properties into a pallet designed and manufactured especially for your materials handling operation.

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Manufacturers of
ENGINEERED DESIGN Pallets
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PRODUCTIMETERS Give Exact Count

Put them on conveyor lines as the first step in adequate production control. Bottle Counter, above, counts various sized bottles. Many models available for counting cases, boxes, cans, parts ... mechanically or electrically.

Send for Catalog 10 for details on up-to-date Productimeter counting methods.

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FOR HIGH OR
LOW CEILINGS

Item J-632
\$32.00



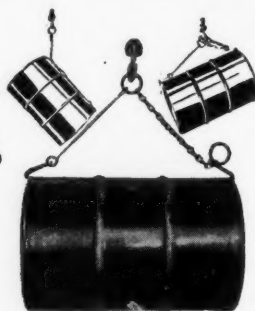
Universal Grab

For picking up all types of heavy boxes, crates, bales or other loads where hooks may be used.

Made of heavy forged steel hooks with an adjustable spread which provides for handling of every size load from 16" to 48". Sturdy $\frac{3}{8}$ " BBB chains. Capacity 2000 lbs.

The heavier the load the tighter the grip. Let the "Universal Grab" do your heavy lifting, avoid accidents to your employees.

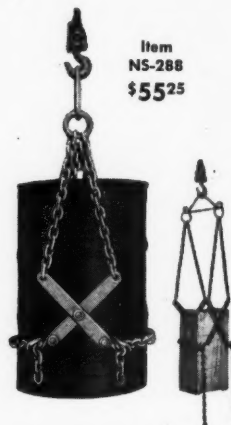
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B-205
\$12.50



Drum-Barrel Sling Half-Ton Capacity

Will handle drum for draining purposes. Can pick up drum from lying position and set on end. Use for loading on or unloading truck and for general purpose handling. Will handle barrels, drums, kegs, anything with a lip such as on steel drum or wooden barrel. Simple in construction... easy to operate... heavily welded chain, forged grab hooks. Weight $8\frac{1}{2}$ lbs. Air dry enamel finish.

Item
NS-288
\$55.25



Barrel and Box Grab

For picking up any type of wood or steel barrel, box or container, from 40" diameter down to small nail keg size. Capacity, 1-ton. Weight 35 lbs.

Wood Pallets



Item B-691

Specially designed pallets for the most exacting materials handling problems; constructed of pine or hardwood with $2\frac{1}{2}$ " cement-coated drive screw nails used exclusively throughout. Available in single or double faced, and in any size and spacing between boards. All lumber exteriors well surfaced, free from splits and unsound knots. Prompt delivery guaranteed!

SIZE	RUNNERS (2x4")	CONSTRUCTION & SPACING BETWEEN BOARDS (Top 2 pcs. 1x6") (Bottom 3 pcs. 1x6")	LCL	PRICE	
				CL	
36x48	36" long	4 pcs. 1x4 equally spaced approx. 2" apart	100 pcs.	650 pcs.	\$3.40 ea.
42x48	42" "	5 pcs. 1x4 " " " " "	\$3.80 ea.	560 pcs.	3.65 ea.
48x48	48" "	6 pcs. 1x4 " " " " "	4.05 ea.	500 pcs.	4.00 ea.
48x60	48" "	6 pcs. 1x4 " " " " "	5.10 ea.	400 pcs.	4.50 ea.

Chamfering of bottom boards, .25 per pallet, regardless of quantity. All prices f.o.b. shipping point.

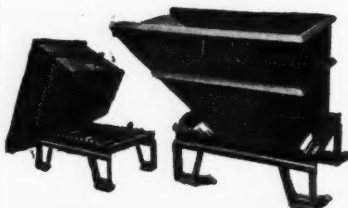


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\$17.50

Industrial Dust Pan

No shovel to bother with. Moves around in places too tight for a wheel-barrow. Very light to handle. Weighs only 45 lbs. Capacity one bushel. Exceptionally well constructed to withstand rough treatment in industrial plants.

The pan or metal basket which measures 18" x 18" x 18" is made of 16 gauge sheet steel, the frame of 1" x $1\frac{1}{2}$ " x $\frac{3}{4}$ " angle iron, the handle of 1" tubing, all welded construction. The overall height is 48". Two 8" rubber tired, ball bearing wheels.



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For handling hot metal parts, scrap stampings, other heavy materials. Rockers geared to the truck. Self-seating, smooth operating. Built of heavy steel plate, reinforced with sturdy angles. All welded construction. Two standard sizes. Air dry enamel finish.

Item S-878-A \$105.00
Capacity $\frac{1}{2}$ cu. yd. Weight 600 lbs.

Item S-878-B \$115.00
Capacity 1 cu. yd. Weight 750 lbs.

Be sure to give floor clearance of your lift truck when ordering.

We Design and build all types of Trucks, Skids, Pallets, Platforms, Racks, Boxes, Bins, Tables, for Pick-up, Loading, Moving, Shipping, Dumping and Storage.

When Ordering:

Always give "Item" number; this will help to prevent error. All weights are approximate. All prices are f.o.b. Detroit, Mich. Prices subject to change without notice.

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brought to light by means of a bulb attached to the worker's wrist. Note the waste time and effort that hand piling involves . . . and how the truck is all tied up till the job is done.

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For proof, look at this actual photographic study. It shows a typical plant routine—storing a load of parts—but with every move recorded on film.

Where the unloading is done by hand, the worker moves back and forth, back and forth, wasting time and effort with every move. And until he's done, no one else can use the truck.

Not so with Barrett Lift-trucks and Skids! One move releases the lift-truck for other jobs . . . the materials stay on the skid, ready to move with a sweep of the lift-truck handle

—no repiling beforehand.

Try Barrett Lift-trucks and Skids for your materials handling. Whether it's room to room, floor to floor, or in and out of trucks, you'll find that one man with a Barrett does more than 3 or 4.

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WAY . . . with Barrett Lift-trucks and Skids. No piling and unpling—the load stays on the skid—and one sweep of the handle frees the truck for other work.

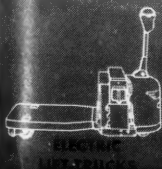


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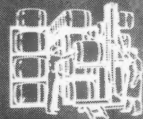
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